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EXCISE GUIDE

JOHNSTON.

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A GUIDE

TO

EXCISE CANDIDATES.

Fourth Edition,

WITH EXAMINATION PAPERS.

BY

R. JOHNSTON, F.R.G.S.,

Author of the "Civil Service Arithmetic," &c.

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A GUIDE

TO

CANDIDATES FOR THE EXCISE.

The mode of entering the Excise has been considerably varied since the abolition of the system of nomination by patronage. Such appointments are filled up by means of Competitive Examinations held twice a year, viz., in June and December. The Examinations are held simultaneously at several places throughout the United Kingdom, including Glasgow, Inverness, Leeds, Bristol, Limerick, and Galway, by printed papers forwarded from London.

Though many of the intending competitors, at least for some weeks previous to the Examination, wisely place themselves under the guidance of teachers of eminence in their profession, yet a large percentage, from various causes, are unable to do so, particularly those who live in remote country districts. To the latter the following observations must be valuable, more especially to those who have not yet made a first attempt at the Examination. It is necessary also for persons who purpose undergoing a short course of special preparation, to work some time in the country previously, lest the classes which they may join in London, Liverpool, Dublin, Bandon, Bristol, or Leeds may be too advanced for their individual improvement. The programme issued by the Civil Service Commissioners for the open Competition for the Excise is here annexed :—

PROGRAMME OF EXAMINATION FOR THE EXCISE.

(1). Handwriting, 400, (2). Orthography, 400.
(3). Arithmetic, 400. (4). Geography,[1] 400.
(5). English Composition, 400.
(6). Higher Arithmetic and Mensuration,[2] 400.

The age is fixed from 19 to 22[3]. A fee of £1 is required from every candidate who attends the Examination; and candidates may present themselves as often as they please. The SALARY commences at £60 per annum, with an additional allowance of 2s. per diem when actively employed, which, in most instances, is the entire year. They are eligible for promotion to higher posts in the Service, which promotion usually takes the following course :—

The successful candidate, whose references have been communicated with, and whose character satisfies the Commissioners, is directed to report himself at some office of Inland Revenue in the locality most convenient to his residence, where, under the immediate superintendence of a superior officer of the department, he receives instruction for about six weeks, attached to a distillery or malt-house. According to the usual course of events he may, if steady and attentive to his duties, receive a step from Second-class Assistant to First-class Assistant in two years; and, after a similar interval of time, he is usually entrusted with a "Ride," which not only brings an increase of salary, but also an allowance for a horse. About four years afterwards he is placed in the responsible position of Division Officer. After a short time, if his conduct be satisfactory, he is allowed to pass the Examination for a Supervisorship, for which he must compete with several others of the same rank as himself. The next step is to that of a Collectorship, a responsible and remunerative office, as may be seen from the tables which follow. Without any pretence for that extreme accuracy which every experienced officer of the department necessarily possesses, our readers may safely rely on the above as a sufficiently correct outline of the general course of promotion in the Inland Revenue.

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[1] Especially that of the British Isles.

[2] There are only two or three questions in Mensuration. The Arithmetic includes Cube Root and problems.

[3] The following are the usual exceptions:—

(*a*). Members of the military and naval services may deduct any time during which they have served. (*b*). Persons who have served two years in the Civil Service continuously, or in the Royal Irish Constabulary, or as registered copyists, may deduct any time (not above 5 years) they may have thus served.

The Examination Hall.

As might naturally be expected, it is quite impossible to have a perfectly equitable mode of conducting the examinations in so many places at the same time; and even at head-quarters candidates often complain of the neglect of matters of detail, as well as want of distinctness in pronunciation on the part of some of the readers. In case of the separate addition exercise, where time is limited and important, the candidate should begin as soon as he gets the paper, unless directed to the contrary. In other papers it is best to cast the eye down and answer those questions first which give little trouble, reserving those requiring thought or study until the last. Neglect of this often brings a candidate to grief, who wastes valuable time in trying to solve a difficult problem that he should have employed in answering half a dozen easy ones.

THE INLAND REVENUE is naturally divided into the OUTDOOR Department and the INDOOR or Office. In the following tabular statements we have endeavoured to condense, as far as is consistent with clearness and distinctness.

HEAD OFFICE—SOMERSET HOUSE.

Chairman, £2,000; Deputy do., £1,500; 3 Commissioners, £1,200 each. These five officers constitute what is called *The Board.* There are 2 Secretaries, £1,200 each; 4 Assistant do., £800 to £900 each; and 7 Clerks, £600 to £700 each. This office also has

Officer.	Staff.	Salary.
I. Clerk .	3	£470 to £550
II. Do. .	1	420 „ 500
III. Do. .	17	400 „ 450
IV. Do. .	24	100 „ 400
*		

The *Solicitor* £2,000, is assisted by an Assistant do. £1,000, with 4 Chief Clerks £600 to £800, and :—

Officer.	Staff.	Salary.
I. Clerk .	5	£450 to £550
II. Do. .	5	350 „ 450
III. Do. .	6	200 „ 300
IV. Do. .	1	90 „ 200
*		

* A few supplementary clerks.

The *Receiver-General* £1,000, has a Chief Clerk £600 to £700, and :—

Officer.	Staff.	Salary.
I. Clerk .	4	£350 „ £450
II. Do. .	4	250 „ 300
III. Do. .	6	150 „ 250
IV. Do. .	4	90 „ 200

The Controller in the Legacy and Succession Duty Office has £1,500, Assistant £900 to £1,000, 2 Chief Clerks £600 to £800, 2 Superintendents £500 to £650, and 6 Senior Clerks £450 to £550. In this department 17 of the LOWER DIVISION (see Civil Service Guide) Clerks have been introduced, with salaries commencing at £80 and rising to £200 a year; besides :—

Officer.	Staff.	Salary.
I. Clerk .	33	£320 to £420
II. Do. .	35	230 „ 300
III. Do. .	34	150 „ 220
IV. Do. .	17	90 „ 140

The Accountant and Controller-General £1,000, has an Assistant £650 to £750, and 5 Senior Clerks £520 to £620.

Officer.	Staff.	Salary.
I. Clerk .	13	£400 to £500
II. Do. .	19	300 „ 380
III. Do. .	19	160 „ 260
IV. Do. .	21	90 „ 150

There are also in this office 7 Lower Division Clerks, commencing at £80 and rising triennially by increments of £15 to £200—their maximum. There are 2 Writers at 10d. an hour, and a Boy Writer at 10s. a week.

In the CHIEF INSPECTOR'S OFFICE (EXCISE) he has £1,000, 3 Superintending Inspectors £700 to £800, 8 Inspectors £450 to £650, 21 Assistant Inspectors £350 to £400, 50 Examiners at £200 each, and 1 Diary Assistant £300 to £350.

In the CHIEF INSPECTOR'S OFFICE (TAXES) he has £1,000, 3 Superintending Inspectors £700 to £800, 9 Inspectors £550 to £650, with 171 Surveyors £100, rising £37 10s. triennially to £400; and 29 Assistant Surveyors with same salaries, and 15 Lower Division Clerks as described above.

In the LABORATORY the Principal has £600 to £700, Deputy £425 to £500, 8 Assistants ranging from £260 to £500, Book-keeper £120 to £250, Keeper of Chemicals £70 to £120, his Assistant £70 to £105 per annum.

The REGISTRAR OF WARRANTS has £370 to £450, Chief Clerk £260 to £350, I. Clerk £150 to £240, II. Clerk £90 to £150.

The EXAMINER OF SPOILED STAMPS has £600 to £700, 2 Assistants £400 to £500, 2 I. Clerks £250 to £340, 2 II. Clerks £150 to £250, 2 III. Clerks £90 to £150.

The STOREKEEPER-GENERAL has £800 with allowances £280, 2 Assistants £500 to £600, Chief Clerk £450 to £500, 4 I. Clerks £350 to £420, 6 II. Clerks £260 to £320, 6 III. Clerks £180 to £240, 3 IV. Clerks £90 to £160. There are also 11 Lower Division Clerks, 4 Superintendents £90 to £110, 9 Warehousemen with same salaries, 12 Porters £75 to £90.

The CONTROLLER OF STAMPING has £700 to £800, Deputy £500 to £600, Assistant £340 to £450, 2 I. Superintendents £240 to £300, 3 II. do. £190 to £240, 3 III. do. £170 to £190, 4 IV. do. £120 to £140. There are 82 Stampers ranged in four classes with salaries from £40 to £140. At MANCHESTER the Superintendent has £340 to £400, Deputy £240 to £325 : there are 6 Stampers from £75 to £100, and so on.

INCOME TAX. There are 3 Special Commissioners £600 each, Examiner of Claims and Examiner of Assessments £600 each, 11 Upper Division Clerks £100 to £400, 21 Lower Division Clerks £80 to £350 (four being under the new scheme rising only to £200) and 4 Writers.

OUT-DOOR ESTABLISHMENT. 8 Collectors I. class £700 to £800, 20 do. II. class £550 to £650, 36 do. III. class £450 to £550 ; 190 Clerks to Collectors £100 to £200 ; 69 Supervisors of Footwalks £260 to £300, 222 do. of Rides £230, to £250,*

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* And keep of a horse, £55.

920 Division Officers £140 to £200, 72 Ride Officers £115 to £130, 75 I. Assistants £95, 287 II. do. £60,† 29 messengers £70 to £100 per annum.

† And 2s. a day when on duty.

IRELAND.

The Solicitor (Custom House, Dublin) has £1,500, Controller of Stamps and Taxes £800; and :—

Officer.	Staff.	Salary.
Chief Clerk .	2	£500 to £700
Senior do. .	1	420 ,, 500
I. Clerks .	5	300 ,, 450
II. Do. .	7	90 ,, 250
Supervisor of Stampers	1	180 ,, 250
Clerks to Collectors	41	100 ,, 200
Supervisors of Footwalks	18	260 ,, 300
Do. of Rides .	40	230 ,, 250
Division Officers	48	140 ,, 200
Ride Officers .	172	115 ,, 130
Assistants .	92	95 ,,
Do. II. Class .	103	60 ,, *

* And 2s. per diem when employed.

SCOTLAND.

The Scotch Establishment has a Solicitor, £1,200 ; Assistant do., £700 to £800 ; a Controller, £800 to £1,000 ; a Superintending Inspector of Taxes, £700 to £800 ; a Collector at Edinburgh and do. of Excise and Taxes, £700 to £800 each, and the following :—

Officer.	Staff.	Salaries.		
I. Clerks .	3	£350	10	£450
II. Clerks .	6	250	10	320
III. Clerks .	10	160	10	240
IV. Clerks .	9	80	10	150
Clerks to Collectors	59	100	5	280
Surveyors of Taxes				
I. Class .	8	420	20	500
II. Class .	10	345	15	400
III. Class .	10	260	10	330
IV. Class .	6	200	10	250
Assistants. .	5	100	37½*	400
Inspectors .				
I. Class . .	1	600	0	650
II. Class . .	2	550	0	650
Supervisors .	25	260	0	300
Do. of Rides (†) .	49	230	0	250
Division Officers .	330	140	8 5	200
Ride do. (†) .	90	115	5	130

* Every three years. † Allowance for a horse.

There are 125 First-class Assistants at £95, and 120 Second-class Assistants at £60, and 2s. a day when employed. There are 17 Preventive men, with salaries from £115 to £200 a-year. The Surveyors of Taxes receive various allowances as Registrars of Voters, and several of the clerks have duty pay, ranging from £10 to £50. There are 8 Stampers, ranging from £70 to £150 a year, several porters £1 a week, some messengers, &c.

HANDWRITING.

Opinions vary considerably as to what constitutes good handwriting—what one calls "good" writing, another may call only "middling;" and what one examiner marks eighty per cent., another will only mark seventy, and perhaps a third sixty-eight, just as each has fixed a standard in his own mind. In most instances, however, all educated persons agree, when a neat and finished specimen of penmanship is placed before them for inspection, in pronouncing it good writing. An opinion has recently been almost universally adopted by the public, ascribing to the Civil Service a *particular kind* of handwriting, which alone is looked upon with approval by the Examiners, and is considered genuine by competitors. To a certain *extent* this is true; and candidates, who, a few weeks before going in for examination, have studiously endeavoured to modify their accustomed handwriting, have not always profited by this knowledge; and not having sufficient time to effect this object, frequently go into the examination-hall without any fixed system of penmanship, and, in consequence, obtain a very low mark indeed. Had such candidates carefully improved the legibility of their former hand, a more satisfactory result would have undoubtedly followed. It is only when we have several weeks that we can change our accustomed handwriting, and even then only by care, attention, and practice. The importance of great care and attention to handwriting will be best understood by recollecting that it affects, more or less, all papers sent into the examiners, giving them an appearance of neatness and finish, or that of carelessness, slovenliness, and untidiness in execution.

To improve the penmanship of their pupils, teachers have adopted various methods. We may pass over in silence the exceptional cases of some of the Metropolitan professors who advertise perfection in six lessons, as much beyond our powers to comprehend as their ability to execute. Some prefer much practice in writing ordinary copies, others recommend an imitation of some standard writer in the school, generally an assistant master, who has succeeded in acquiring a tasteful and finished hand. Copies with heading lines are very useful; but it has been found that after reading the same line over again six or seven times, the performer, becoming wearied from the monotony of the exercise, gradually relaxes into a careless hand, and finishes with a scribble. One of the best writers of what is known as the "Civil Service hand," with whom we have been acquainted, improved his penmanship, in addition to the ordinary careful daily dictation, by writing over and over again the same headline: "Command of hand is grand," or the like. In fact, he wrote this line dozens of times daily, and was rewarded for his industry by receiving from the Examiners 95 marks out of a maximum of 100, a result that should satisfy the most ambitious student, and the most experienced teacher. It must be added, however, that he cultivated a taste for finished penmanship at the same time.

The Civil Service Commissioners very fairly and fully set forth the grounds on which they judge penmanship, namely: "Good handwriting consists in the clear formation of the letters of the alphabet." A youth preparing for one of these examinations must be able to write with moderate rapidity, that he may, if possible, omit no words in the dictation, which is frequently read very fast by the Superintending Examiner. We may here remark in passing, that no part of the system is so imperfectly organized as the superintendence of provincial examinations, in which the Commissioners should have long since endeavoured to secure an approach to uniformity. Just imagine a number of inexperienced persons utterly untrained to the art, conducting examinations, some of whom have never read a Dictation previously, others pronouncing the words with laughable pedantry, while the provincialisms of others render many of the words unintelligible to the bewildered candidate. A remarkable confirmation of this has just occurred in Dublin, March, 1877. The person in charge actually forgot the time, and there was no clock in the room. The candidates, ninety-seven in number, got twenty-four minutes instead of thirty for "separate addition," and on their remonstration they were informed the matter would be mentioned to the Civil Service Commissioners. How the Commissioners will overcome the little difficulty remains to be seen.

Handwriting at Competitive Examinations is usually tested by an exercise similar to those set forth below; in Test Examinations, an ordinary letter has to be copied in a specified time.

It will be perceived that the Examiners require from Candidates in a severe Competitive Examination, not only a specimen of handwriting, but also a specimen of penmanship given in different sizes, so as to enable them to judge of the power and elasticity of their writing in several sizes.

I.

Competitive Exercise in Handwriting.

To be copied *line for line*—Time ½ an hour.

Financial Condition of the Lodges of the Manchester Unity in Ireland which made Returns to the Parent Society.

	No. of Lodges.	No. of Members.	Annual Income.			Present Capital.			Surplus.	Deficiency.		
			£	s.	d.	£	s.	d.		£	s.	d.
Belfast	7	462	457	6	4	3,226	15	7	None.	2,743	15	5
Cork	6	326	409	16	0	732	8	9		2,582	3	11
Dublin	5	186	203	14	5	270	19	7		1,733	6	0
Limerick	3	120	156	10	8	542	9	8		524	14	11
Totals	21	1094	1,227	7	5	4,727	8	7	—	7,584	0	3

The branches of the Manchester Unity in Ireland are thus not only insolvent to at least the amount of £7584, for one lodge has sent in no return; but unless the present contributions or benefits are altered, the amount of their insolvency will, of course, continue to increase every year.

The wisdom and candour, therefore, of the movable committee in thus laying the financial condition of the various lodges openly and honestly before the public cannot be too much praised. In thus acting, the Manchester Unity has set an example which it is greatly to be hoped will be followed by the rest of the affiliated orders. There is every reason to believe that the financial condition of the Foresters' Courts is no better than that of the Manchester Unity's Lodges.

II.

Competitive Exercise in Handwriting.

Copy, on the form supplied, as much as you can in half an hour, and write as well as you can.

N.B.—The copy should correspond *line for line* with the original.

Of all the taxes with which we are
concerned the assessed taxes are those
which give rise to the fewest questions of difficulty
or importance. They are a good deal evaded, but it is
seldom that any doubt is raised as to the correct
interpretation of the law. In our annual Reports therefore we
rarely have any observation to make upon this branch of the Revenue.

LAND, ASSESSED, AND PROPERTY AND INCOME TAXES.

	1858.	1859.	1860.	1861.	1862.
	£	£	£	£	£
Land Tax	1,100,081	1,106,190	1,113,869	1,104,077	1,092,950
Assessed Taxes (Schedules B. to L.)	18,49,529	1,915,244	1,838,731	1,837,694	1,871,306
Additional £10 per cent, by 3 Vict. c. 17	14,182	14,671	1,986	1,258	1,264
	2,963,792	330,6,105	2,954,586	2,943,029	2,965,520
Property & Income Tax	5,818,659	8,746,494	9,492,963	9,071,428	9,111,943
TOTAL .	8,782,451	11,782,599	12,447,549	12,014,457	12,077,463

The only alteration which was made last year
in the law relating to these taxes was that by
which the surplus land tax is applied to the redemption
of an equivalent portion of it.

ORTHOGRAPHY.

The importance of this subject exceeds that of every other in the programme. Bad spelling disqualifies a candidate, however excellent his answering may be in *all* other subjects. Any one can easily test his own proficiency in spelling. Let him obtain the assistance of a friend, who will ask him to write down out of the *Civil Service Spelling-Book*, say, a column of words, given under dissyllables, another under trisyllables, and a third column of polysyllables. If he has made only two or three errors, he may be perfectly satisfied with his performance; and may with confidence enter the examination-hall, after correcting one or two "orthographical" exercises in the time specified.

Candidates exhibit such a variety of proficiency in this subject that it is difficult to lay down rules calculated to be beneficial to one class of proficients which might not be positively injurious to another. Bearing this in mind, and discarding all empirical rules, we shall give a few hints for the improvement of the most backward in the first instance. It may be remarked that a very injudicious use of imperfect, or bad spelling, by some young and inexperienced teachers is often made, much to the detriment of the pupils under their charge. Some teachers, by permitting pupils to correct bad spelling daily, have succeeded in effecting an object the very opposite to that intended. Forgetting that the eye is an almost infallible guide to correct orthography, they have allowed the learner to be so much accustomed to *see* bad spelling that his eye gives him no assistance whatever. Indeed a somewhat similar course has been frequently adopted by gentlemen of high University standing combined with long experience as educationists. It is perfectly obvious that in order to teach a person to make a good and perfect watch, it is not necessary to show him badly made watches. Common sense seems to indicate that those of superior mechanism should be kept in view, to allow him to imitate their excellences. At the same time a good and faultless test of the extent of a watchmaker's knowledge might be obtained by bringing before him a badly constructed watch, and requiring him to explain wherein it was faulty; and a still greater test in asking him to improve or bring it to perfection of mechanism. When a person makes from twelve to twenty errors in an ordinary dictation, such an exercise, though very agreeable to most pupils, is too advanced for him; and he should for a considerable time, *copy* from an easy book, with the utmost care, until his eye becomes trained to the appearance of words when spelled correctly. Most learners have an aversion to going over the same exercise a second time; and when they are required to copy a paragraph, they frequently exclaim, " I did this a few days ago," or make some similar observation. In general his disinclination may be removed by asking the number of errors on the previous occasion, and adding, that now fewer are expected. In this manner the attention of the learner will be fixed more intently on the exercise, and the work will be profitable. For, there is not only such a thing as unprofitable work, but positively injurious work done in schools. The old and absurd system of compelling pupils to copy out a certain portion of a book as a punishment for some fault, is an instance of this; and, in addition, all careless and slovenly work is injurious to those who have to undergo a severe competitive examination.*

In a word, it may be safely recommended to all students who are backward in spelling to persevere in using careful *copying:* as they gradually improve, dictation exercises may be added. A corrected list of the words misspelled should be kept and turned up once a week for repetition. When the learner has made such progress that he only misspells three words out of a moderately difficult dictation, such as that on "London," or "The Badger," he may safely go through the columns of his spelling-book, and almost perfect accuracy will finally reward him for his industry and perseverance. If *time* be no object a candidate should study the meanings of words at the same time that he is *improving* his orthography: and should his object be a more profound knowledge of the English language, such as is required for the higher examinations, he is recommended to make himself thoroughly acquainted with the article on Derivation in the Spelling-Book.

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* It is to be regretted that "Impositions," as they are called, are still resorted to in some large schools, the clearest proof of the incompetency of their conductors in the art of pedagogy.

DICTATION SPECIMENS.

The following Exercises for Dictation have been given by the Civil Service Commissioners:—

I.

These apparently trivial observations seem to take away from the dignity of writing, and therefore are never communicated without hesitation. But it must be remembered that life consists not of a series of illustrious actions or of elegant enjoyments; the greater part of our time passes in compliance with necessities, in the performance of daily duties, in removing little inconveniences, or in procuring petty pleasures. The manners of a people are not to be judged of in the schools of learning or the palaces of greatness, where the national character is obscured or obliterated by travel or instruction, by philosophy or vanity; nor is public happiness to be estimated by the assemblies of the gay or the banquets of the rich. The great mass of nations is neither rich nor gay; those whose aggregate constitutes the people are found in the streets and villages, in the shops and farms; and from them, collectively considered, must the measure of general prosperity be taken. According as they approach to delicacy a nation is refined; and when their conveniences are multiplied, a nation—at least a commercial nation—must be denominated wealthy.

II.

The appearance of this town scarcely corresponds with its real opulence and importance; a considerable portion of the houses being crowded in narrow irregular lanes, which are but indifferently paved and drained. Within the last quarter of a century, however, great improvements have been effected, and are still in progress; footpaths have been formed in most of the streets, and the whole town has been completely lighted with gas; various new squares have been formed, and a considerable number of handsome houses and villas has been erected, mostly near the southern entrance. It is well supplied with excellent water, which is conveyed to the upper rooms of every house in the town. The church, which stands on an eminence, is a plain ancient structure, with a low tower, built of the dark red sandstone of the district. The importance of the place and its neighbourhood is entirely derived from its manufactures, which were carried on here at a very remote period. As early as the reign of Henry the Eighth it was famous for its cottons, or, more properly speaking, for a peculiar description of woollen goods that went by that name. Real cotton goods, however, began to be produced in considerable quantities towards the middle of the last century. But the great prosperity of the town dates from the time when that wonderful invention called the spinning frame was brought into operation. The result has been that many thousand persons are now employed in the town and its immediate vicinity in the various branches of the cotton manufactures.

III.

Those who desire to become better acquainted with this remarkable man should consult his correspondence, which is the best record of his life, and affords the most vivid representation of his character. It presents us with the progressive development of his mind and views, till the one reaches the vigour and the other the comprehensiveness for which at length they became distinguished. He combined intellectual and moral qualities in a degree and with a harmony rarely found. The most strongly marked feature of his intellect was the strength and clearness of his conceptions. It seemed like the possession of an inward light, so intense that it penetrated on the instant every subject laid before him, and enabled him to grasp it with the vividness of sense and force of reality. Hence, what was said of his religious impressions may be used to characterize his intellectual operations: "He knew what others only believed; he saw what others only talked about." Hence also, perhaps, arose in a great measure the vehemence with which he opposed views and notions contrary to his own. Of his moral nature, honesty and fearlessness, earnestness, and love of truth and justice, were the prominent qualities; and though these were calculated to give an aspect of sternness to the outline of his character, yet they were tempered with an expansive benevolence, and combined with a tenderness of disposition, which rendered him an object of the most devoted attachment to all about him. It was said by one who knew him well, that "he loved his family as if he had no friends, his friends as if he had no family, and his country as if he had neither family nor friends."

IV.

The forms of English law, however inadequate to defend the subject in state prosecutions, imposed a degree of seeming restraint on the crown, and wounded that pride which is commonly a yet stronger sentiment than the lust of power with princes and their counsellors. It was possible that juries might absolve a prisoner; it was always necessary that they should be the arbiters of his fate. Delays, too, were interposed by the regular process, not such, perhaps, as the life of man should require; yet enough to weaken the terrors of summary punishment. Kings love to display the divinity with which their flatterers invest them in nothing so much as the instantaneous execution of their will, and to stand revealed, as it were, in the storm and thunderbolt, when their power breaks through the operation of secondary causes, and awes a prostrate nation without the intervention of law. There may indeed be times of pressing danger, when the conservation of all demands the sacrifice of the legal rights of a few: there may be circumstances that not only justify, but compel, the temporary abandonment of constitutional forms. It has been usual for all governments, during an actual rebellion, to proclaim martial law, or the suspension of civil jurisdiction. And this anomaly, I must admit, is very far from being less indispensable at such unhappy seasons in countries where the ordinary mode of trial is by jury, than where the right of decision resides with the judge. But it is of high importance to watch with extreme jealousy the disposition towards which most governments are prone, to introduce too soon, to extend too far, to retain too long, so perilous a remedy. In the fourteenth and fifteenth centuries the court of the constable and marshal, whose jurisdiction was considered as of a military nature, and whose proceedings were not according to the course of the common law, sometimes tried offenders by what is called martial law, but only, I believe, either during, or not long after a serious rebellion.

SPECIMENS OF ORTHOGRAPHICAL EXERCISES.

[*To be used with great caution.*]

I.

(Time 80 minutes.)

But awl thees glowrees and substantchal advantadges were butt the gylding off the chanes of servittude. The Penal Code made its appeerance early in the yere, and of the crymes which it ennumerated, no less than haf ware stait ofences, so minuteley subdvided and speseifyed, as in affect to render ameenable to punishment evry won obnokshus in the smawlest deggree to guvernment. By a dekree in the spring of the saim yere, aite stait prissons were istablished in France, and were soon filed with a straing and inkongrous asemblaige. Thoes in the North ware chiefly occuppied by Demmocrats. Thoes in the South by ecclesiasticks whoe had being innvolved in the fawl of the Pope; butt numbirs were imuered for no other reeson than having aksidentelly exsited the gellosy of the Emperour or his minnisters. An order, sined by Napolian or his Minnister of Police, was a suffishent warrent, not onely in France, but threwout Jeremeny and Ittaly, for the arest of enny individuel, whoe was parraided thro the townes loded with chanes leike a mallifacter, and then consined to the gluemy oblivvion of the stait prissons. The unniversalety of the imperiel sweigh aded feerfuly to its terors; except in Rusha, Turky, Brittain, Urope aforded no asylam for the viktim of tiranic persicusheon. A desspotism was thus afectuelly manetaned, unparraleled for rigger and severrity in moddern tymes; not a whispur of disscontent or ressistence was herd; and awl clases vyed in adulashon of the rewlor whoe was vissibly draneing the hart's blud of the cuntery.

II.

[Time 30 minutes.]

We hev had allreddy suffishent occassion dewring the coarse off this histery, to menshon the dispencing power of emprisonment of eksacting loanes and bennevalenses, of pressing and quartoring soljors, of awltering they kustims, of erreoting monopolley's. Thees branchs off pouer, if not direckly oposite to the principles of all free goverment, must, at least, be aknolleeged to be danjerous to fredom in a monnarkikal constittution, where an eeturnal jellocy must be presserved agenst the suveran, and no disskreshhonary pouers must evver be intrusted to him, by witch the propertie or personel libbarty of enny subject can be effected. The kings of Ingland howevver had allmost konstantly exersised thees pouers; and if on enny occassion the Prins had being oblidged to submitt to laus ennacted agenst them, he had evver, in practise, illewded these laus, and retourned to the saim arbittrery adminnistration. Dureing allmost three sentcherries before the accesion of James, the reegal orthorety, in awl thees pertickelers, had never onse been kalled in questahun. Wee mai allso obssurve that the principals in general, witch prevaled dureing that aije, were so feverable to monnerkie, they bestoed on it an orthorety allmost abbsolute and unlimmited, saycred and indefeesable. The meatings of Parlyment ware so pricarous; there cessions so short, cumpaired to the vacations; that wen men's eyes were tourned upwerds in serch of suveran pouer, the Prinss aloan was apped to streik them as the onely purmenent majestrate, invested with the hole madjesty or orthorety of the stait. The grate complaissence two of Parlyments, dureing so long a pierred had ekstreemly diggraded and obskewered those assemblys: and as awl instences of oposition to perogative must ave been draun from a remoat aije, they had the less orthorety even with thoes who were akwainted with them.

III.

[Time 30 minutes.]

But notwethstanding the seaming dicline of his boddely powers, those of his minde were rendared more viggerous by adversety. During the confarance, which lasted some weaks, he had to sustane aloan the difense of his cause aganst some of the most elloquent speekers of the House of Commons. All who were pressent were astonnished at his promptness of aprehension, his fasillety of expression, and his dignety of maner. While the confarance was going on, the king had parmission to take the exorcise of rideing. He gave his word of honner not to quitt the iland, but he was so slendarly garded, that it allmost apeered as if the parlament wished him to seeze some opertunaty of making his iscape. This he was importund to do by his frends, who were now alowed to have acsess to him; but he regected their advise, saying he would not brake the promiss he had given. He probbebly, also, may have deseeved himself with the hope that, as the treety was now drawing towerds a conclusion, he would soon be ristoard to piece and libbaty at least, if not to his formar orthorraty. The treety consisted of sevverell articles, to all of which, though ending to the abrijment of his peroggetive the king agread, two only excepted, one of which was for the abberlition of eppiscapicy, the other that all who had had bourn arms in his cause should be declaired trayters. After furthar dibbait, the king agrede to some modefecation in riggard to eppiscapicy; but nothing could induce him to assent to the last artecle. While a reckonsilleation between the king and parlement seemed thus approaching, Cromwell, by one dareing act, anihelated the whole power of the parlement, and destrawed all Charleses' hopes. He sent Kernal Pride, a man who had formally been a draman, with a body of troups, to seround the Parlement house, a little befour the time when the membars were to assembel, with orders to purmit only those to enter who belonged to the indipendant rippublecan party, and to exclood all the rest; and this he called purjing the parliment.

SEPARATE ADDITION OR LONG TOTS.

Those who have not been accustomed to this exercise are in general much discouraged on their first trying it. A person nominated to the Civil Service some years ago, took up twelve tots and found forty-five minutes had elapsed when he was ready to test the accuracy of his answers, which to his utter astonishment he found correct in only three or four instances. This appeared very discouraging. After doing six of them every night and morning for about four weeks, however, he was much pleased to find he could do the twelve accurately in twenty-three minutes. Such being the experience of most people who have practised "totting," it is only necessary to add that full marks are given for perfect accuracy within the time allowed. For specimens and further information on this subject see *Civil Service Tots.*

ARITHMETIC.

The reader of this volume is supposed to have already worked the elementary rules of Arithmetic, and we assume he can add, subtract, multiply, and divide, with ease and accuracy. The greater number of students, however, has been accustomed to work so carelessly that their operations are extremely inaccurate, one of the worst faults to come before an examiner. Our remarks on Arithmetic are under the following heads—Accuracy, System of Work, and Expedition.

Accuracy.—Inaccuracy, generally speaking, arises from two causes, a careless habit of working, and inattention. If the student has been long accustomed to work carelessly and in a slovenly manner, and more particularly if his teacher has overlooked these blemishes, in order to arrive at the necessary standard of proficiency for a successful competitive examination, no better exercises can be worked at first than those in Simple Multiplication, which, after some practice, will tend to secure for him expertness in the working of more difficult questions. Let him also learn the tables thoroughly, so that he may have no hesitation in performing any operation in reduction. Indeed many candidates are unable to proceed with the examination paper, from lacking a perfect knowledge of the ordinary arithmetical tables. It is in the simple operations of addition, subtraction, multiplication, and division that the true foundation of arithmetic is laid. An accurate knowledge of the tables, with careful practice, will ensure a complete mastery of Reduction. Frequently pupils avow to their extreme inaccuracy, and after several attempts at improvement are almost ready to despair. Most undoubtedly this has arisen, in many instances, from their being unable to fix attention on the subject before

them. Careful practice in the elementary rules will in a short time produce an appreciable improvement.

System of Work is also very important, and bears considerable weight in the result of the examination. This matter is often overlooked by teachers, and its importance is frequently disregarded by pupils, who, as a rule, seem perfectly satisfied when they have obtained the required result, although they may have used 150 figures instead of fifty in the operation. One of the commonest errors to be met with in system consists in such questions as the following:—Suppose a question is stated in Simple Proportion as below—

78 : 325 : : £9 17s. 8d.

The first thing most students would do is to reduce the third term to pence. Of course, in many instances, this must be done. In the case before us, however, there is no need of this reduction. It is preferable to divide the first and third term by 2, and then we have

39 : 325 : : £4 18s. 10d.

Now, after resolving the first term into its factors 13 × 3, we find 3 will not divide evenly into either the second or third terms. Again, trying the next factor 13, we find it is also a factor of our second term, and we now have

3 : 25 : : £4 18s. 10d.

It is true some very intelligent learners would easily see that 13 is a factor of both first and second terms. We prefer to proceed in the manner which would in all probability be adopted by the majority of our readers. We now multiply £4 18s. 10d. by 25, using the factors 5 × 5 and divide by 3 for the answer. In order to improve the student's method, he should compare his work with that of a good teacher; and having seen his errors, should endeavour to correct them in subsequent operations. Indeed the proper thing for a person to do when he writes down a question is to try and discover the simplest possible and shortest possible method of working it, instead of (as in the case with most young arithmeticians) commencing the work without a moment's reflection. The student should also look at the "sum," and see that it could bear no meaning except the ordinary one. For instance, a certain number of tons, cwts., qrs., might be given at a certain price per ton, *ordinary* wording; but if the same question were given at so much per cwt., a per-centage of the candidates would overlook this simple deviation from the ordinary wording. If it were the price per stone that was given a still greater number, in the hurry of an examination-hall, would evidently work the question widely different from the wording. An illustration of this came recently very prominently under our notice. Four candidates went in for a certain office, and the following question was among the number given:—

"Three silver candlesticks, weighing in all 36 ounces, cost £18, the silver being valued at £12, and the workmanship at £6; what should five candlesticks cost, each of which weighs 24 ounces, and the cost of the workmanship being doubled?"

One of the candidates was particularly good at arithmetic, which had long been his favourite subject; the others were weak, and insufficiently prepared. On returning from the examination one of the latter, speaking of the above question, said that the candidate who was considered so good sent in a wrong answer; for the others had all the same result. Having heard the question repeated from memory, it was easily concluded that instead of the three candidates sending in the correct answer, they sent in an incorrect one, and the fourth candidate a correct one, which was fully borne out on investigating the matter carefully. An experienced teacher can, in most instances, put his finger on the error in a "sum," as he is familiar with the kind of errors learners are likely to make.

Expedition.—The only thing that can give expedition is actual practice. Neatness and accuracy, however, must not be sacrificed to quickness of execution. Let the student who is slow at arithmetic work two or three hours a day for a fortnight, always commencing with such a question as 706543 × 907543, and at the end of this time he will himself perceive a great improvement. Afterwards he should work "to time" several examination papers. Let him not fall into the [illegible] questions alone; for if [illegible]ult competitive examina- [illegible] the whole treatise, includ- [illegible]lems found at the end [illegible] who is very slow, [illegible]metic each day, [illegible] in each of the [illegible]; which exer- [illegible] by taking [illegible] third week, [illegible] he can try [illegible] manual; [illegible] papers.

[illegible] open

[illegible]

3. Multiply together $5\frac{1}{2}$, $\frac{3}{17}$, $\frac{5}{22}$, $1\frac{1}{16}$, and $\frac{1}{4}$.
4. Divide $7\frac{1}{3}$ by $9\frac{1}{2}$.

—

5. Add together 19·735, ·000756, 4732·92, and ·375499.
6. Subtract 876·93287 from 974·3217.
7. Multiply 9·238 by 65·2.
8. Divide 2·890721925 by ·0729.
9. Express 5s. 3d. as the decimal of £7.

—

10. Add together $4\frac{1}{5}$, $7\frac{13}{14}$, $9\frac{1}{8}$, $1\frac{1}{35}$.
11. Subtract $34\frac{9}{20}$ from $100\frac{3}{8}$.
12. Multiply together $8\frac{2}{9}$, $45\frac{25}{37}$, $1\frac{1}{13}$, $\frac{81}{130}$, and $\frac{1}{14}$.
13. Divide $8\frac{3}{21}$ by $5\frac{1}{7}$.

—

14. Add together 1·35 of a furlong and 7·32 of a yard, and give the answer in feet and the decimal fraction of a foot.
15. Subtract 2·32 of an hour from ·65 of a week.
16. Multiply 380·73 by ·0725.
17. Divide 7·036 by ·073 to 4 places of decimals.
18. Express 2 cwt. 3 qrs. 14 lbs. as the decimal of a ton and a half.

19. Reduce 15 lbs. $13\frac{1}{2}$ ozs. 12 dwts., to grains.
20. If 5 hogsheads, each weighing 7 tons 3 cwt. 3 qrs. $16\frac{4}{5}$ lbs., cost £239 6s. 6d., what is that per ton?
21. Find (by Practice) the dividend on £731 14s. 6d., at 14s. 2d. in the pound.

22. Find the simple interest on £4,160 for 6¼ years, at 3 per cent. per annum.

23. In 5,432,762 square feet, how many acres, roods, &c., are there?

24. If 20 men can mow a field of 9 acres 2 roods in 8½ days of 10 hours each, how many fields of twice this area can 17 men mow in 50 days of 8 hours each?

25. Find (by Practice) the value of 2 tons 5 cwt. 3 qrs. 3½lbs., at £3 13s. 6d. per cwt.

26. In what time will £3,125 amount to £3,681 12s. 9¾d., at £3¾ per cent?*

MISCELLANEOUS.

You had better not attempt any of the following questions till you have done as many as you can of the preceding ones.

27. A grocer mixes 3 cwt. of tea which cost him 16 guineas a cwt., with one cwt. which cost him £19 12s.; at what rate per pound must he sell the mixture so as to gain 4 per cent. on his outlay?

28. Find the length of the edge of a cube which contains 450 feet 1,088 inches.

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* Either through inadvertence, or intentionally, in order to test the Candidates' intelligence, the Examiners omitted to say whether it was at Simple or at Compound Interest.

29. From the following table:—

Railway Passengers.	Great Britain.	France.	Prussia.
1st Class ..	4,743,210	2,124,910	307,490
2nd Class ..	10,291,740	6,172,420	1,292,470
3rd Class ..	21,409,210	15,473,550	2,374,230

find the proportion per cent. which the whole number of second class passengers bears to the number of first and third class passengers in Great Britain and Prussia together.

30. Find the value of $5{\cdot}4\dot{9}$ of $\cdot031\dot{8}$ of $\cdot\dot{0}4761\dot{9}$ of twenty-five guineas.

Solutions of the above.

(1) $\cancel{8},16\times13\times5=1040$ Common Denominator.

$$\text{Now } 5+3+\frac{130+325+560+208}{1040}$$

$$=8\tfrac{1223}{1040}=9\tfrac{183}{1040}\ \textit{Ans.}$$

(2) $10\frac{1}{4}-7\frac{7}{17}=10\frac{17}{68}-7\frac{28}{68}=2\frac{57}{68}$ *Ans.*

(3) $\frac{\cancel{11}}{2}\times\frac{3}{\cancel{17}}\times\frac{5}{\cancel{22}}\times\frac{\cancel{17}}{16}\times\frac{3}{4}=\frac{45}{256}$ *Ans.*

(4) $7\frac{1}{8}\div9\frac{1}{2}=\frac{\overset{3}{\cancel{57}}}{\underset{4}{\cancel{8}}}\times\frac{\cancel{2}}{\cancel{19}}=\frac{3}{4}$ *Ans.*

(5)
19·735
·000756
4732·92
·375499
4753·031255 *Ans.*

(6)
974·3217
876·93287
97·38883 *Ans.*

(7)
9·238
65·2
18476
46190
55428
602·3176 *Ans.*

(8) ·0729)2·8907,21926 See the rule given in *Civil Service Arithmetic*, page 98.

729) 28907,21925 (39·65325 *Ans.*
2187
7037
6561
4762
4374
3881
3645
2369
2187
1822
1458
3645
3645

(9) $\frac{5s.\ 3d.}{£7}=\frac{\overset{9}{\cancel{63}}}{\cancel{7}\times240}=\frac{\cdot9}{24}=\frac{\cdot225}{6}=\cdot0375$ *Ans.*

(10) $$\begin{array}{l} 2\,\underline{)\,\cancel{6},14,\quad 8,\quad 35} \\ \quad\ \ \cancel{7}\times4\times35\times2=280 \text{ Com. Denominator.} \end{array}$$

$$21+\frac{56+260+35+8}{280}=21\frac{359}{280}=22\frac{79}{280}\ \textit{Ans.}$$

(11) $100\frac{3}{8}-34\frac{9}{20}=100\frac{15}{40}-34\frac{18}{40}=65\frac{37}{40}$ *Ans.*

(12) $$8\tfrac{2}{9}\times45\tfrac{25}{37}\times1\tfrac{1}{13}\times\tfrac{81}{130}\times\tfrac{1}{14}$$

$$=\frac{\overset{2}{\cancel{74}}}{\cancel{9}}\times\frac{\overset{\cancel{130}}{\cancel{1690}}}{\cancel{37}}\times\frac{\cancel{14}}{\cancel{13}}\times\frac{\overset{9}{\cancel{81}}}{\cancel{130}}\times\frac{1}{\cancel{14}}=18\ \textit{Ans.}$$

(13) $$8\tfrac{3}{21}\div5\tfrac{1}{7}=\frac{\overset{19}{\cancel{171}}}{\underset{3}{\cancel{21}}}\times\frac{\cancel{7}}{\underset{4}{\cancel{36}}}=\tfrac{19}{12}=1\tfrac{7}{12}\ \textit{Ans.}$$

(14)

1·35 furlong
40
54·00 poles
$5\frac{1}{2}$
270
27
297 yards; to which add 7·32
7·32
304·32
3
912·96 feet *Ans.*

(15)
·65 of a week.
7
4·55 of a day.
24
109·20 of an hour; from which
2·32 [take 2·3
106·88 hrs. 106 hrs.=4 day
60 [10 hrs
52·80 minutes.
60
48·00 secs.

∴ *Ans.*=4 days 10 hrs. 52′ 48″

(16)
380·73
·0725
190365
76146
266511
27·602925 *Ans.*

(17)
73) 7036 (96·3836
657
466
438
280
219
610
584
260
219
410

It will be observed that 6 in fourth place is mor accurate than 5.

(18) $$\frac{\text{2 cwt. 3 qrs. 14 lbs.}}{\text{1 ton 10 cwt.}}=\frac{\text{11 qrs. 14 lbs.}}{30\times112}=\frac{\overset{23}{\cancel{322}}}{30\times\underset{8}{\cancel{112}}}$$

$$=\frac{2\cdot3}{3\times8}=\frac{\cdot2875}{3}=\cdot0958\dot{3}\textit{ Ans.}$$

(19)
$$\begin{array}{rrr}
\text{lbs.} & \text{ozs.} & \text{dwts.}\\
15 & 13\frac{1}{2} & 12\\
12 & & \\
\hline
193\frac{1}{2} & \text{ozs.} & \\
20 & & \\
\hline
3882 & \text{dwts.} & \\
4 & & \\
\hline
15528 & & \\
6 & & \\
\hline
93168 & \text{grs. } \textit{Ans.} &
\end{array}$$

(20)
$$\begin{array}{rrrrcrcrrr}
\text{tons} & \text{cwt.} & \text{qrs.} & \text{lbs.} & & & & & & \\
7 & 3 & 3 & 16\frac{4}{5} & & \text{ton.} & & £ & \text{s.} & \text{d.}\\
 & & & 5 & & & & & & \\
\hline
35 & 19 & 2 & 0 & : & 1 & :: & 239 & 6 & 6\\
20 & & & & & 20 & & & & 8\\
\hline
719 & & & & & 20 & & 1914 & 12 & 0\\
4 & & & & & 4 & & & & 10\\
\hline
2878 & & & & & 80 & & 19146 & 0 & 0
\end{array}$$

$$\begin{array}{rrl}
\cancel{2878}) & \cancel{19146} & \\
1439 & 9573 & (6\\
 & 8634 & \\
\hline
 & 939 & \\
 & 20 & \\
\hline
 & 18780 & (13\\
 & 18707 & \\
\hline
 & 73 & \\
 & 12 & \\
\hline
 & 876 & (0
\end{array}$$

$\therefore$ *Ans.*$=£6\ \ 13\ \ 0\frac{876}{1439}$

(21)

	£	s.	d.
	£731	14	6
10s.=$\frac{1}{2}$ of a £	365	17	3
2s. 6d.=$\frac{1}{4}$ of 10s.	91	9	$3\frac{3}{4}$
1s. 8d.=$\frac{1}{6}$ of 10s.	60	19	$6\frac{1}{2}$
	£518	6	$1\frac{1}{4}$ *Ans.*

(22)

$$\textit{Ans.}=\frac{\overset{\overset{260}{\cancel{1040}}}{\cancel{4160}}}{\underset{\cancel{4}}{\cancel{100}}}\times\frac{\cancel{25}}{\cancel{4}}\times\frac{3}{1}=£780$$

(23)

9) 5432762 sq. ft.
603640..2 sq. ft.
4
11) 2414560
11) 219505..5
4,0) 1995,5..$\frac{5}{4}$=1 yd. 2 ft. 36 in.
4) 498..35 pls. 2 sq. ft.
124 ac. 2 rds. 35 pls. 1 yd. 4 ft. 36 in.

(24) The reason of the following statement is evident:—

20 : 17 : : 1 Field.
$8\frac{1}{2}$: 50
10 : 8
2 : 1

$$\therefore \textit{Ans.}=\frac{\cancel{17}\times\overset{\cancel{5}}{\cancel{50}}\times\overset{2}{\cancel{8}}\times\cancel{2}}{\underset{\cancel{4}}{\cancel{20}}\times\cancel{10}\times\cancel{17}\times\cancel{2}}=2\ \textit{fields.}$$

(25) 2 tons 5 cwt. 3 qrs. $3\frac{1}{2}$ lbs. at [£3 13s. 6d. per cwt.

$$\begin{array}{r|rrrl}
 & 20 & & & \\ \hline
 & 45 & 3 & 3\frac{1}{2} & \\
 & 1 & 5 & 2\frac{1}{7} & \\ \hline
 & 45 & 15 & 7\frac{1}{2} & \text{at }\pounds 1\text{ per ton.} \\
 & & & 3 & \\ \hline
 & 137 & 6 & 10\frac{1}{2} & \\
 \text{10s.} = \frac{1}{2}\text{ of }\pounds 1 & 22 & 17 & 9\frac{3}{4} & \\
 \text{3s. 4d.} = \frac{1}{3}\text{ of 10s.} & 7 & 12 & 7\frac{1}{4} & \\
 \text{2d.} = \frac{1}{20}\text{ of 3s. 4d.} & 0 & 7 & 7\frac{9}{16} & \\ \hline
 & 168 & 4 & 11\frac{1}{16} & \textit{Ans.}
\end{array}$$

(26) Interest for 1 year $=\dfrac{\overset{125}{\cancel{3125}}}{\underset{4}{\cancel{100}}}\times\dfrac{15}{4}=\dfrac{1875}{16}$

$$\therefore \textit{Ans.}=(\pounds 3681\ \ 12\text{s. } 9\tfrac{3}{4}\text{d.}-\pounds 3125)\div\frac{1875}{16}$$

$$=\pounds 556\ \ 12\text{s. } 9\tfrac{3}{4}\text{d.}\times\frac{16}{1875}=\frac{\overset{\overset{\pounds\quad\ \ \text{s.}}{1781\quad 5}}{\cancel{8906}\quad\cancel{5}}}{\underset{375}{\cancel{1875}}}$$

$$=\frac{\overset{\overset{\pounds\quad\text{s.}}{71\quad 5}}{\cancel{356}\quad\cancel{5}}}{\underset{15}{\cancel{75}}}=4\tfrac{45}{60}=4\tfrac{3}{4}\text{ years.}$$

(27) 3 cwt. at £16 16s. = £50 8s.
1 cwt. at £19 12s. = £19 12s.

$$\begin{array}{r}\pounds 70\ \ 0\text{s.}\end{array}$$

$$\text{Now } 100 : 104 :: \begin{array}{r}\pounds 70\\ \hline 448\end{array}$$

$$\therefore \textit{Ans.}=\frac{\overset{26}{\cancel{104}}\times\cancel{70}\times\cancel{20}\text{s.}}{\underset{\underset{\underset{8}{\cancel{32}}}{\cancel{64}}}{\cancel{448}}\times\cancel{100}}=3\text{s. }3\text{d. }\textit{Ans.}$$

(28) 450 cubic feet 1088 inches=778688 inches.

$\therefore$ *Ans.*$=\sqrt[3]{778688}=92$ in.=7 ft. 8 in.

(29) First and third class in Gt. Britain & Prussia =21409210+2374230+4743210+307490= 28834140

Whole second class=10291740+6172420+1292470=17756630

$$\therefore \textit{Ans.}=\frac{17756630\times100}{28834140}=61\cdot5819...$$

(30) Since $\cdot\dot{9}=1$ we have

$$\textit{Ans.}=5\cdot5\times\cdot03\frac{\overset{2}{\cancel{18}}}{\underset{11}{\cancel{99}}}\times\frac{\overset{4329}{\cancel{47619}}}{\underset{90909}{\cancel{999999}}}\times\frac{\overset{5}{\cancel{25}}\times21}{\underset{4}{\cancel{20}}}\text{£}$$

$$=\frac{\cancel{11}\times\overset{\cancel{7}}{\cancel{35}}\times\cancel{4329}\times\cancel{5}\times\overset{7}{\cancel{21}}}{2\times\underset{\underset{\underset{4}{\cancel{20}}}{\cancel{100}}}{\cancel{1100}}\times\underset{\underset{\cancel{3}}{\cancel{12987}}}{\cancel{90909}}\times4}\text{£}=\frac{7}{32}\text{£}=4s.\ 4\tfrac{1}{2}\text{d.}$$

PRELIMINARY PAPER.

A

Time, 2$\frac{1}{2}$ hours.

(1) Reduce 3 tons 5 cwts. 2 qrs. 7 lbs., to ounces.

(2) If 3 ac. 2 rds. of land cost £700, find the value of a plot containing 17$\frac{1}{2}$ perches.

(3) Find (by Prac.) dividend on £476 15s., at 4s. 10d. in the pound.

(4) Find simple interest on £903 15s., for 7 years, at 3$\frac{1}{2}$ per cent. per annum.

(5) $\frac{4}{17}+2\frac{1}{3}+\frac{7}{34}+\frac{5}{11}$. (6) $52\frac{3}{7}-25\frac{15}{28}$.

(7) $5\frac{4}{9}\times 6\frac{3}{7}$. (8) $9\div 11\frac{1}{27}$.

(9) 876·543+·001324+4·1928374+257·62075.

(10) 1005·20731—843·907262.

(11) 65·2076×3·409. (12) 60·32414÷9·238.

(13) Express 2s. 1$\frac{1}{2}$d. as the decimal of £12.

(14) In 61,397,258 in. how many miles, &c.?

(15) A bankrupt's debts amount to £15,490, and his assets to £5615 2s. 6d. How much will a creditor receive on £237 10s.?

(16) Find (by Prac.) price of 2 qrs. 3 bush. 1 pk., at £5 16s. per quarter.

(17) Find amount of £2762, for 3 years, at 4 per cent. per annum, compound interest.

(18) $6\frac{1}{3}+\frac{5}{18}+10\frac{1}{10}+\frac{8}{21}$. (19) $11\frac{3}{19}-8\frac{5}{9}$.

(20) $\frac{3}{8}\times 2\frac{5}{11}\times\frac{4}{9}\times\frac{11}{36}$. (21) $13\frac{12}{17}\div 2\frac{3}{4}$.

(22) 1·010305+777·8989+6·235601+43·277652.

(23) 2430·17258—84·2961. (24) 572·076×·00328.

(25) 111·26÷·0075.

(26) Reduce ·0237 of £2 13s. 7d. to pence and the decimal of a penny.

(27) Reduce 2 lbs. 3 oz. 2 dwts. to grs. troy.

(28) If 3 horses plough 4980 sq. yards in $2\frac{1}{2}$ days, how long will it take 7 horses to plough 87,150 sq. yards?

(29) Find (by Prac.) price of 1230 articles, at £1 3s. 7d. per dozen.

(30) At what rate per cent., simple interest, will £3125 amount to £3681 12s. $9\frac{3}{4}$d. in 4 yrs. 9 months?

(31) $2\frac{3}{4}+\frac{2}{11}+3\frac{5}{6}+9$. (32) $12\frac{1}{40}-10\frac{2}{37}$.

(33) $\frac{12}{13}\times8\frac{2}{3}\times\frac{1}{4}\times4\frac{5}{16}$. (34) $16\frac{5}{32}\div12$.

(35) 2·987463+9·00101+64·305699+459·9987.

(36) 421·32079−289·643.

(37) ·6200796×·10239. (38) ·3008096÷41·32.

(39) What decimal of $2\frac{1}{2}$ cwts. is $10\frac{1}{2}$ lbs.?

PRELIMINARY PAPER.

B

Time, $2\frac{1}{2}$ hours.

(1) Reduce 12 tons 3 qrs. 17 lbs. 4 oz. to ounces.

(2) If silver be 5s. 6d. an ounce, find the value of 8 oz. 6 dwts. 16 grs.

(3) Find (by Prac.) the value of 13,840 articles, at 16s. 9d. a score.

(4) Find simple interest on £656 6s. 8d., for $2\frac{1}{2}$ months, at $7\frac{1}{2}$ per cent. per annum.

(5) $\frac{3}{8}+12\frac{1}{5}+1\frac{2}{9}+2\frac{7}{12}$. (6) $13\frac{2}{11}-8\frac{1}{4}$.

(7) $3\frac{3}{7}\times\frac{35}{48}$. (8) $\frac{1}{16}\div1\frac{5}{8}$.

(9) 993+2·0624+·0041+23·7421.

(10) 623·51414−500·2107328.

(11) $243{\cdot}19 \times {\cdot}0177$.

(12) $47{\cdot}341 \div 329{\cdot}7$ to three places.

(13) Reduce ·0253 of a mile to feet and the decimal of a foot.

(14) In 6055 grs. how many lbs., oz., &c.?

(15) A sack of potatoes weighs 178 lbs. If 6 such sacks cost £2 4s. 6d., find the cost of 44 lbs.

(16) Find (by Prac.) the price of 3 pecks, 1 gal. 3 qts. 1 pint, at £4 12s. per gallon.

(17) Find the amount of £1500 for 3 years, at 6½ per cent. per annum, compound interest (neglecting fractions of a penny).

(18) $5\frac{1}{4}+\frac{13}{20}+2+\frac{413}{936}$. (19) $17\frac{2}{13}-12\frac{6}{35}$.

(20) $\frac{10}{43}\times 11\frac{7}{15}$. (21) $1\frac{35}{64}\div\frac{6}{32}$.

(22) $57{\cdot}14+3842{\cdot}29731+{\cdot}000246+467$.

(23) $52{\cdot}412-37{\cdot}8467219$. (24) $6{\cdot}5862\times 740$.

(25) $3{\cdot}48223\div{\cdot}0047$.

(26) Express 42 lbs. as a decimal of a ton.

(27) In 273,856,038 sq. inches, how many acres, &c.?

(28) The rates of a railway train and a coach are as 7 to 2. If the former goes 42 miles an hour, how long will it take the latter to go 342 miles?

(29) Find (by Prac.) the price of 2 qrs. 14 lbs., at £5 16s. 8d. a ton.

(30) At what rate per cent., simple interest, will £1250 amount to £1962 10s. in 6 years?

(31) $7\frac{1}{3}+\frac{5}{9}+\frac{14}{24}+9\frac{11}{12}$. (32) $31\frac{9}{35}-20\frac{3}{11}$.

(33) $7\frac{3}{5}\times\frac{7}{11}\times\frac{8}{19}\times 12$. (34) $9\frac{1}{3}\div 3$.

(35) ${\cdot}001234+1003{\cdot}5687+1012{\cdot}9763+99$.

(36) $100-99{\cdot}0013$. (37) ${\cdot}001357\times 1{\cdot}00664$.

(38) Divide 99·765300 by 1·00134 to four places of decimals.

(39) Give the value of 5·298 of 6s. 8d. in pence and decimal fraction of a penny.

PRELIMINARY PAPER.

C

Time, 2½ *hours.*

(1) Reduce 257,691 ounces to tons, &c.

(2) If 5 lbs. of butter cost 8s. 1½d., find cost of 213 lbs.

(3) Find (by Prac.) the dividend on £12,135 16s., at 13s. 4d. in the pound.

(4) Find simple interest on £960 for 12 yrs., at 2¼ per cent. per annum.

(5) $3\frac{1}{42}+\frac{5}{21}+1\frac{1}{14}+2\frac{1}{8}+\frac{1}{3}$. (6) $9\frac{11}{12}-4\frac{5}{8}$.

(7) $5\frac{3}{6}\times 3\frac{3}{11}$. (8) $7\frac{1}{4}\div 12\frac{4}{7}$.

(9) 8·0012+3·0546+789·0005+·000601.

(10) 23·4−2·34. (11) 83·452×36·01.

(12) 4·65÷812·3 to four places.

(13) Express 4·238 lbs. as grs. (troy).

(14) In 1 m. 7 fur. 10 pls., how many feet?

(15) If either 5 oxen or 7 horses eat up the grass of a field in 87 days, in what time will 2 oxen and 3 horses eat up the same?

(16) Find (by Practice) the value of 2 tons 21 lbs., at £12 10s. per cwt.

(17) Find the amount of £6500 in 4 years, at 3 per cent., compound interest (neglecting fractions of a penny).

(18) $\frac{4}{7}+\frac{3}{10}+1\frac{5}{12}+4\frac{17}{35}+3\frac{15}{28}$. (19) $6\frac{3}{7}-5\frac{19}{35}$.

(20) $\frac{3}{8}\times6\frac{1}{2}\times\frac{13}{14}\times\frac{7}{26}$. (21) $\frac{14}{45}\div1\frac{17}{25}$.

(22) 153·5207+·00705+·2007063+63·7+·194.

(23) 9·112—7·2045. (24) 16·012×4·0016.

(25) 17·637÷84·2 to four places of decimals.

(26) Reduce £4 9s. 3d. to guineas, and decimal fraction of a guinea.

(27) Reduce 3 lbs. 3 oz. 3 dwts. to grs.

(28) If 2 men, working 6 hours a day, finish a certain work in 10 days, in how many days will 10 men, working 3 hours a day, get through the same work?

(29) Find (by Practice) cost of 1728 articles, at £3 17s. 6d. a dozen.

(30) In what time will £369 17s. 10d. amount to £462 7s. 3½d. at 2½ per cent. per annum, simple interest?

(31) At what rate per cent. will £3825 amount to £4972 10s. in 3 years?

(32) $3\frac{1}{4}+4\frac{1}{8}+5\frac{1}{6}+\frac{3}{10}$. (33) $\frac{7}{11}\times2\frac{1}{2}\times\frac{3}{7}\times10\frac{1}{2}$.

(34) $41\frac{5}{9}\div11\frac{2}{3}$.

(35) 16·005+4·0206+93·707+·004203+700·251.

(36) 120·05—10·697.

(37) 737·2363×0·6013.

(38) 1·006÷·061 to four places.

(39) Express 41,391 secs. as the decimal of 3 weeks.

HIGHER ARITHMETIC AND MENSURATION.

D

31st December 1875. *Time,* 3 *hours.*

(1) How do you determine whether a vulgar fraction will produce a terminating decimal? Find the vulgar fraction which is equal to $\dfrac{\cdot 4\dot{3}4\dot{9}}{3\cdot 42\dot{5}5\dot{2}}$

(2) Extract the square root of ·00005476 and the cube root of $2\frac{1371}{2744}$.

(3) In what time will £2,151 6s. 8d. amount to £2,366 9s. 4d., at $2\frac{1}{2}$ per cent. per annum, simple interest?

(4) Find the compound interest on £2,080 for 3 years, at 4 per cent. per annum (neglecting fractions of a penny).

(5) Find the present worth of £2457 12s. due 9 months hence, the rate of interest being $3\frac{1}{2}$ per cent.

(6) A train starts with its full complement of passengers. At the first station it drops one-third of these, and takes in 96 more. At the next it drops one-half of the new total, and takes in 12 more. On reaching the third station there are found to be 248 left. What number started?

(7) Find by duodecimals the volume of water which will fill a tank of which the interior is 5 feet long, 4 feet 7 inches wide, and 2 feet $4\frac{1}{2}$ inches deep. Express the answer in cubic feet and the fraction of a cubic foot:

(8) If a man, his wife, and child consume 36 pounds of bread in 9 days, when bread is at 5d. the four pound loaf, how much bread a day would a family consisting of a man and wife and three children have to restrict each member to so as not to exceed the same rate of expenditure when the four pound loaf cost 6d.? In each case assume that the rate of consumption of a man, woman, and child are as 4, 3, and 2.

(9) It appeared from a daily paper that the annual expenses of the Suez Canal might be estimated at about 17,800,000 francs, exclusive of 10,000,000 of francs needed for the payment of the interest on the shares. Assuming that all the receipts over and above the sum of these amounts are to be divided as profits among the shareholders, the founders, and the Egyptian Government, the holder of shares taking 70 per cent., and each of the latter parties 15 per cent., what must the yearly receipts be in order that an English holder of 20 shares out of the 400,000 representing the whole stock, may receive £73 10s. as his proportion of the profits? (£1 = 25 francs).

(10) The specific gravities or relative weight of proof-spirit and water may be taken as 923 and 1000, disregarding temperature. From a gallon jar filled with proof-spirit a certain quantity is drawn off and water added till the vessel is again full. The mixture is then found to have a specific gravity of 992. How much spirit has been abstracted?

(11) In what proportion must wines of 15s., 20s., 26s., and 30s. a gallon respectively, be mixed, so as to give a profit of 14$\frac{2}{7}$ per cent. on the cost when sold for 24s. a gallon?

(12) A person invests £5617 10s. in the three per cents. at 93$\frac{1}{2}$. He sells out when they have fallen to 91$\frac{3}{4}$, and invests the proceeds in Russian five per cents. at 98. What is the difference in his income under the two investments? Brokerage is to be reckoned at $\frac{1}{8}$ per cent. on all the stock sold or bought.

(13) The sides of a triangular field are 58, 50, and 40 chains: find its area.

(14) Find the area of the largest circular plate that can be cut out of a square sheet of iron containing 25,281 inches.

(15) The base of a rectangular prism is an equilateral triangle with a side of 7 inches, and its height is 24 inches: find its cubic contents. ($\sqrt{3}=1\cdot732$).

ANSWERS.

A. (1) 117,488 oz. (2) £21 17s. 6d. (3) £115 4s. 3$\frac{1}{2}$d. (4) £221 8s. 4$\frac{1}{2}$d. (5) $3\frac{257}{11222}$. (6) $26\frac{25}{28}$. (7) 35. (8) $\frac{243}{298}$. (9) 1138·3579114. (10) 161·300048. (11) 222·2927084. (12) 6·53. (13) $\cdot 0088541\dot{6}$. (14) 969 mls. 7 pls. 2 ft. 8 in. (15) £86 1s. 10$\frac{1}{2}$d. (16) £13 19s. 1$\frac{1}{2}$d. (17) £3106 17s. 5d. (18) $17\frac{29}{315}$. (19) $2\frac{103}{171}$. (20) $\frac{1}{8}$. (21) $4\frac{184}{187}$. (22) 828·422458. (23) 2345·87648. (24)

1·87640928. (25) 14834·6. (26) 15·239. (27) 13008 grs. (28) $18\frac{3}{4}$ days. (29) £12[illegible] 17s. $3\frac{1}{2}$d. (30) $3\frac{3}{4}$. (31) $15\frac{101}{132}$. (32) $1\frac{1437}{1480}$. (33) $8\frac{5}{8}$. (34) $1\frac{133}{384}$. (35) 536·292872. (36) 131·67779. (37) ·063489950244. (38) ·00728. (39) ·0375.

B. (1) 431,700 oz. (2) £2 5s. 10d. (3) £579 11s. (4) £10 5s. $1\frac{1}{4}$d. (5) $16\frac{137}{360}$. (6) $4\frac{41}{44}$. (7) $2\frac{1}{2}$. (8) $\frac{1}{26}$. (9) 1018·8086. (10) 123·3034072. (11) 4·304463. (12) ·1435. (13) 133·584 ft. (14) 1 lb. 12 dwts. 7 grs. (15) 1s. 10d. (16) £36 4s. 6d. (17) £1811 18s. 6d. (18) $8\frac{127}{180}$. $4\frac{447}{455}$ (19) [illegible]$\frac{447}{455}$ (20) $2\frac{2}{3}$. (21) $9\frac{9}{10}$. (22) 4366·437556. (23) 14·5652781. (24) 4873·7880. (25) 740·9. (26) ·01875. (27) 43 ac. 2 rds. 25 p. 12 y. 3 ft. 109 in. (28) $28\frac{1}{2}$ ms. (29) 3s. $7\frac{3}{4}$d. (30) $9\frac{1}{2}$. (31) $18\frac{7}{18}$. (32) $10\frac{379}{385}$. (33) $24\frac{24}{55}$. (34) $1\frac{1}{3}$. (35) 2115·546234. (36) ·9987. (37) ·00136596977. (38) 99·6317. (39) 423·84.

C. (1) 7 tons 3 cwts. 3 qrs. 5 lbs. 11 ozs. (2) £17 6s. $1\frac{1}{2}$d. (3) £8090 10s. 8d. (4) £259 4s. (5) $7\frac{85}{168}$. (6) $5\frac{7}{24}$. (7) 18. (8) $\frac{203}{352}$. (9) 800·056901. (10) 21·06. (11) 3005·10652. (12) ·0057. (13) 24410·88 grs. (14) 10,065 ft. (15) 105 days. (16) £502 6s. $10\frac{1}{2}$d. (17) £7315 16s. 2d. (18) $10\frac{13}{42}$. (19) $\frac{31}{35}$. (20) $\frac{39}{64}$. (21) $\frac{5}{27}$. (22) 217·6224563. (23) 1·9075. (24) 64·0736192. (25) ·2095. (26) 4·25. (27) 18,792 grs. (28) 4 days. (29) £558. (30) 10. (31) 10. (32) $13\frac{101}{120}$. (33) $7\frac{7}{44}$. (34) $3\frac{59}{105}$. (35) 813·987803. (36) 109·353. (37) 443·30018719. (38) 16·4918. (39) ·0228125.

D. (1) $\frac{395}{3111}$. (2) ·0074 and $1\frac{6}{14}$. (3) 4 years. (4) £259 14s. 4d. (5) £2394 14s. $9\frac{123}{821}$d. (6) 564. (7) $54\frac{41}{96}$. (8) $1\frac{13}{27}$ lbs., $1\frac{1}{9}$ lbs., $\frac{20}{27}$ lbs. (9) £3,212,000. (10) $\frac{69}{77}$ galls. (11) 2, 2, 1, 1, or 5, 9, 6, 1. (12) £100 2s. $6\frac{90}{157}$d. (13) 98 acres 1r. 6 pls. 24 yds. 7·2 ft. (14) 137 sq. ft. 127·6974 sq. inches. (15) 509·208 cubic inches.

In order to afford Candidates additional practice in Arithmetic, the following Papers—one of which the learner is recommended to work every morning—have been specially prepared.

I.

Time—half an hour.

[*You are recommended not to look at the Answers until you have worked the whole Paper.*]

1. Reduce 7698547 drs. avoirdupois, to tons, cwts., &c.
2. Add together $37\frac{7}{11}$, $59\frac{10}{11}$, $13\frac{49}{55}$, and $9\frac{103}{163}$.
3. From $39\frac{47}{57}$ take $19\frac{18}{19}$.
4. Bring 11 seconds to the decimal of an hour.
5. If 17 men earn £12 15s. in 4 days, working $7\frac{1}{4}$ hours a day, what sum should 28 men earn in 12 days, working $8\frac{1}{2}$ hours per diem?

6. Russian 5 per cent. stock issued at 75 per cent. is now at $1\frac{1}{8}$ premium, and brokerage $\frac{1}{4}$ per cent.; how much must a person invest in this stock to secure an income of £276 5s.?

II.

Time—half an hour.

[*You are recommended not to look at the Answers until you have worked the whole Paper.*]

1. Reduce 777993 pints to quarters, and find (by Practice) the value of the result at £2 2s. 8d. per quarter.
2. Add together 99·187, 9918·7, 9·91870, 991870, ·099187. 3. From 110·235 take 59·0097.
4. Find the value of $\frac{19}{25}$ of £1 13s. 4d. ·0275 of £8 6s. 8d. + $\frac{11}{13}$ of £2 1s. $8\frac{1}{2}$d.
5. If 2 qrs. 22 lbs. of pork cost £1 14s. $1\frac{1}{2}$d., find the cost of 9 tons 9 cwt. 3 qrs. 27 lbs.
6. If I invest in the 3 per cents. at 72, and on their rising to 80 sell out and invest the proceeds in a 4 per cent. stock at 96, thereby increasing my income £43 10s.; find the sum at first invested.

III.

Time—half an hour.

[*You are recommended not to look at the Answers until you have worked the whole Paper.*]

1. Add $\frac{5}{7}$ of 79 cwt. 3 qrs. 21 lbs. to $\frac{11}{16}$ of 248 cwt. 2 qrs. 8 lbs., and give the result in lbs.

2. A carpenter is paid 32s. a week, of 8 hours to the day; he remains idle on Monday, and only works 3 hours on Tuesday; find his wages for this week.
3. Multiply 77·075 by 19·0603.
4. Divide 5764·3 by 62·50.
5. If 5 silver ornaments each weighing 12 ozs., cost 5s. 2d. an oz. for the silver, and 3s. 4d. an oz. for workmanship; find the value of 8 ornaments weighing 72 ozs. of same silver, the cost of the workmanship being doubled.
6. The gross receipts of a railway company in a certain year are apportioned as follows:—41 per cent. to pay the working expenses, 56 per cent. to give the shareholders a dividend at the rate of 3½ per cent. on their shares, and the remainder, £15,000, is reserved; find the paid up capital of the company.

IV.

Time—half an hour.

[*You are recommended not to look at the Answers until you have worked the whole Paper.*]

1. Add together £·875, 1·125 of 16s. 8d. and ·8 of 5s.
2. Add together $19\frac{7}{19}$ $25\frac{84}{95}$, and $517\frac{17137}{19285}$, and take the sum from $75\frac{18}{19}$.
3. Divide £86 13s. 4d. by ·0125.

4. Find the simple interest on £635 16s. 8d. for 5 years, at 6⅔ per cent. per annum.
5. The poles of a telegraph wire are 33 feet apart; if a railway passenger pass each in 2 seconds, find the rate per hour at which the train is travelling.
6. A person invests his capital in the 3 per cents. at 90, he sells out at £96, and invests in 4 per cent. railway shares at par, thereby increasing his income £350 per annum; find sum at first invested.

V.

Time—half an hour.

[*You are recommended not to look at the Answers until you have worked the whole Paper.*]

1. Reduce 3 acres 1 rood 12 poles 3 yards to square inches.
2. From ·375 of 5s. 6d. take ·385 of 5s. 2d.
3. Find dividend on £37055 13s. 4d. at 7s. 7½d. in the pound.
4. Find the cost of carpeting a room 25 feet long and 14 feet 6 inches wide, with carpet 2 feet 6 inches wide, at 2s. 10½d per yard.
5. Bring 675947 pints to quarters, and find (by Practice) the value of the result at £1 17s. 4d. per quarter.
6. How many pounds of tea at 2s. 8d. per pound must a grocer mix with 495 lbs. at 2s. 9d., so that he may realize a profit of £10 per cent. on his outlay, by selling the whole at 3s. a pound?

VI.

Time—40 minutes.

[*You are recommended not to look at the Answers until you have worked the whole Paper.*]

1. Reduce 579325 cubic inches to cubic yards.
2. Reduce $\frac{15}{32}$ of 6s. 8d. to the decimal fraction of £50
3. The difference between the discount on a certain sum due 3 months hence at 5 per cent. per annum, and the interest of same sum for same time is 4d.; find the sum.
4. If the shadow of a tree 30 feet 6 inches high be $91\frac{1}{2}$ feet, what should be the height of a tree whose shadow is 59 feet?
5. A ditch is being dug at the rate of 81 feet per day by 54 men; after 13 days' work 8 of them are replaced by boys, and the work goes on for 11 days more, at the end of which the whole length dug is 1889 feet; how much work per day do the boys do?
6. A man invests £1,638 in the 3 per cents. at 91, and sells £1,600 stock when they have risen to $93\frac{1}{2}$, and the remainder when they have fallen to 85; how much does he gain or lose by the transaction?
7. Find the cube root of $1157\frac{5}{8}$.
8. By selling goods at £5 5s. 6d. per cwt., $5\frac{1}{2}$ per cent. is gained; find how much per cent. will be gained by selling them at 3s. 2d. per pound.

ANSWERS.

I.—(1) 13 tons 8 cwts. 2 qrs. 7 oz. 3 drs. (2) $121\frac{1}{3}$. (3) $19\frac{50}{57}$. (4) ·00305. (5) £71 8s. (6) £4219 14s. $4\frac{1}{2}$d.

II.—(1) 1519 qrs. 4 bus. 1 gallon, 1 pint; £3241 12s. 9d. (2) 1001897·904887. (3) 51·2253. (4) £3 5s. $2\frac{1}{2}$d. (5) £465 9s. $6\frac{3}{4}$d. (6) £9396.

III.—(1) 25535 lbs. (2) £1 3s. 4d. (3) 1469·0726225. (4) 92·2288. (5) £42 12s. (6) £8,000,000.

IV.—(1) £2 0s. 3d. (2) $7\frac{61}{285}$. (3) £6933 6s. 8d. (4) £211 18s. $10\frac{2}{3}$d. (5) $11\frac{1}{4}$ miles. (6) £37500.

V.—(1) 20860416 inches. (2) ·88d. (3) £14127 9s. $5\frac{1}{2}$d. (4) £6 18s. $11\frac{1}{2}$d. (5) £2464 7s. $9\frac{5}{8}$d. (6) £$185\frac{5}{8}$ lbs.

VI.—(1) 12 c. yds. 11 ft. 445 in. (2) ·003125. (3) 108. (4) 19 feet 8 inches. (5) 7 feet a day. (6) £28 gain. (7) $10\frac{1}{3}$. (8) $254\frac{2}{3}$.

Given, 1877.

Time, two and a half Hours.

(1) In 234563 grs. troy, how many lbs., &c.?

(2) If 21 cwt. of sugar cost £96 12s. what is the price of 70 lbs.?

(3) Find (by Practice) dividend on £418 16s. at 5s. 10d. in the £.

(4) Find simple interest on £1715 1s. 8d. for 5 yrs. at 3 per cent. per annum.

(5) $\frac{15}{16} + 1\frac{1}{2} + 6\frac{7}{114} + \frac{13}{57}$.

(6) $15\frac{1}{3} - 14\frac{3}{8}$. (7) $\frac{14}{15} \times 2\frac{1}{35}$.

(8) $\frac{8}{17} \div \frac{11}{51}$.

(9) 34·9362 + ·00063 + 43·2875 + 5432·92543.

(10) 101·207359 — 69·74352.

(11) 763·15 × ·0129.

(12) 765·123 ÷ 12·56 to three places of decimals.

(13) Reduce 13s. $6\frac{3}{4}$d. to the decimal of £4.

(14) Reduce 3 qrs. 2 bus. 1 peck 3 qts. to pints.

(15) If a fourpenny loaf weighs 2 lbs. when wheat is 60s. a quarter, what will be the price of 30 lbs. of bread when wheat is 40s. a quarter?

(16) Find (by Practice) the cost of 12 cwt. 3 qrs. at $3\frac{1}{2}$ lbs. at 48s. a cwt.

(17) Find comp. interest on £3695 in 3 years at $4\frac{1}{2}$ per cent. (neglecting fractions of a penny).

(18) $2\frac{3}{4} + \frac{9}{16} + 3\frac{5}{12} + \frac{17}{24}$. (19) $1\frac{1}{12} - \frac{13}{28}$.

(20) $4\frac{2}{3} \times \frac{3}{4} \times 1\frac{1}{14} \times 1\frac{1}{2}$. (21) $22\frac{1}{7} \div 16\frac{8}{15}$.

(22) 3·50621 + ·00403 + 177·42 + 26·325 + 5·0735.

(23) 40·002 — 38·5601. (24) 34·065 × 10·0063.

(25) 56·277 ÷ ·507.

(26) Reduce ·0465 of a mile to yards.

(27) Reduce 40 ac. 3 rds. 16 pls. to square feet.

(28) If 12 men can build a wall 6 feet high and 3 feet thick in 9 days, how many men should build one 5 feet high and 4 feet thick in 24 days?

(29) Find (by Practice) value of 90072 articles £2 17s. 6d. a dozen.

(30) In what time will £3745 amount to £3932 5s. at $2\frac{1}{2}$ per cent. per annum simple interest?

(31) $3\frac{7}{11}+\frac{11}{12}+4\frac{2}{9}+\frac{13}{66}$. (32) $\frac{13}{18}-\frac{29}{48}$.

(33) $10\frac{1}{2}\times2\frac{5}{6}\times\frac{4}{21}\times3\frac{3}{20}$. (34) $\frac{8}{33}\div9\frac{4}{11}$.

(35) 2·453 of a day + ·055 of an hour, giving answer in minutes, and decimal of a minute.

(36) From 6 furlongs take ·036 of a mile, giving result in yardsand decimal fraction of a yard.

(37) ·006392 × ·0015. (38) ·01404 ÷ ·195.

(39) Express ·015 of a cubic yard in cubic inches, and decimal fraction of a cubic inch.

ANSWERS.

(1) 40 lbs. 8 oz. 13 dwts. 11 grs. (2) £2 17s. 6d. (3) £122 3s. 0d. (4) £257 5s. 3d. (5) $8\frac{11}{19}$. (6) $\frac{53}{72}$. (7) $1\frac{10}{11}$. (8) $2\frac{2}{11}$. (9) 5511·14976. (10) 31·463839. (11) 9·844635. (12) 60·917. (13) ·16953125. (14) 1686 pints. (15) 3s. 4d. (16) £30 13s. 6d. (17) £4216 12s. 2d. (18) $7\frac{7}{16}$. (19) $\frac{109}{300}$. (20) $5\frac{5}{8}$. (21) $1\frac{5}{14}$. (22) 212·32874. (23) 1·4419. (24) 340·8646095. (25) 111. (26) 81·84 yds. (27) 1779426 sq. ft. (28) 10 men. (29) £21579 15s. (30) 2 years. (31) $8\frac{3}{36}$. (32) $\frac{17}{144}$. (33) $17\frac{17}{20}$. (34) $\frac{8}{309}$. (35) 3535·62 minutes. (36) 1256·64 yards. (37) ·000009588. (38) ·072. (39) 699·84 cubic. inches.

ENGLISH COMPOSITION.

Directions.

In this exercise attention is to be paid to handwriting, orthography, punctuation, and style.

The Essay should fill not less than two folio pages.

Subjects given to Candidates :

I. A description of any county in the United Kingdom. II. Photography. III. The writings of one of the following:—Macaulay, De Foe, Thackeray, Sir W. Scott, Goldsmith. IV. Any Fable. V. Any Apophthegm. VI. Arctic Expedition. VII. Prince of Wales's Expedition to India. VIII. A description of any Ruin. IX. Dawn. X. "The Child is Father to the Man." XI. Swimming. XII. Organization. XIII. Temperance. XIV. Cotton. XV. Athletic Sports. &c., &c.

We have already spoken of handwriting and orthography. We shall now speak of punctuation.

PUNCTUATION.

Punctuation is the art of marking the clauses and sentences of written language by points or stops which indicate the pauses required in order to convey the sense intended correctly.

The following rules have been found extremely useful. They will be quite sufficient to ensure, where rightly applied, almost absolute correctness. Let the student take up any carefully-written book, mark its pauses, and see in every instance the rule given below with which they are in conformity. After a short time he will not only be able to punctuate with sufficient accuracy, but also to give the reason why he inserts each pause in its proper place.

"The **Comma** is used to separate those parts of a sentence which, though very closely connected in sense and construction, require a short pause between them."

I. All the simple members or clauses of a compound sentence should be separated from each other by *Commas.*

II. A simple sentence requires no pause except at the end.

III. When a parenthetical, relative or explanatory clause is introduced into a simple sentence, a Comma must be inserted both before and after it.

IV. A *Comma* is often used to render words more emphatic, to separate words occurring in pairs connected by a conjunction, to separate appositional phrases, introductory words and phrases, and subordinate clauses, from the remainder of the sentence.

The **Semicolon** divides a compound sentence into parts less closely connected than those separated by Commas.

I. A *Semicolon* is used to separate two clauses of a sentence, the first being complete in itself, and the second added as an inference, or to give some explanation.

II. It is also used when a sentence contains an enumeration of several particulars.

III. If a sentence consist of several members having a dependence on each other, or on some common clause, and each forming a distinct proposition, a *Semicolon* should separate them.

The **Colon** marks a more lengthened pause than a *Semicolon*.

I. A *Colon* is inserted when a member of a sentence so complete that a full stop might be used, is followed by another containing some additional observation or illustration.

II. When several Semicolons are used (under Rule III.), and the sense suspended until the last clause, a *Colon* should be used before this clause.

III. A *Colon* should be inserted also when a quotation, or a speech, is formally introduced, unless when the word *as* or *namely* is prefixed.

A **Period** is used when a sentence is complete both in sense and construction.

A **Note of Interrogation** (?) is used when a question is asked.

A **Dash** (—) marks an abrupt turn coming in a sentence. Many writers use this instead of a parenthesis.

A **Note of Exclamation** (!) is used after expressions of sudden emotion, terror, surprise, &c.,

and also after solemn or emphatic invocations, or addresses.

A Parenthesis ( ) distinguishes some clause in the body of a sentence, which may be omitted without affecting either the sense or grammatical construction.

The **Apostrophe.** Indeed many learners treat the insertion of an Apostrophe in its proper place as a matter of the utmost indifference, considering it one of those niceties which they may with safety overlook. As a confirmation of the carelessness with which the insertion of an Apostrophe is generally looked upon, it may be mentioned that in fifteen exercises lately examined only four wrote the Apostrophe correctly. Some fall into the more serious error of inserting an Apostrophe with every word ending with an *s*, and write such words as theirs, either their's or theirs'; such words as goslings, either gosling's or goslings', and so on. This error must be carefully guarded against, and the Apostrophe only inserted to indicate or point out the "possessive case."

Rule.—*In singular nouns* always insert the Apostrophe before the *s*; as, a man's house. *In plural nouns* when the plural form is a different word from that used in the singular, the Apostrophe is also placed before the *s*; as, men's hats. In every other case the Apostrophe is after the *s* of plural nouns; as, angels' visits. We write, by established custom, for goodness' sake, for conscience' sake, the witness's testimony, a sheriff's bailiff, two sheriffs' bailiffs, &c., &c.

STYLE.

Under this head we are to point out some of the most important qualities characteristic of good writing, and always found in it to a greater or less extent; and also to explain and illustrate the defects and vices arising from the absence of these qualities. The most important general characteristics of a good style are the following—perspicuity, purity, conciseness, plainness, force, euphony or smoothness, and dignity. The faults opposed to these are obscurity, barbarism, diffuseness, excessive ornament or ornateness, weakness or puerility, harshness or vulgarity. We shall take up these points in the order in which they have been mentioned, which may be regarded as the order of their importance. Certainly the first requisite of a good style, whether in writing or speaking, is *perspicuity;* and the greatest and most unpardonable fault in style, is that of *obscurity.* It is scarcely necessary to illustrate this. The chief object both of speaking and of writing is to be understood: if we fail in this particular, we had better have remained silent. If our language be not intelligible, it can hardly possess any other good quality; but any such quality that it may have is entirely wasted. Who can tell whether you have expressed yourself as briefly, as forcibly, or as plainly, as the nature of the matter in hand would permit, if he does not know what you intended to say? And who is likely to read through pago after page of obscurities constantly in search of a meaning that can only be discovered by a most painful effort, even if it be really worth discovering? The bad policy displayed in all kinds and degrees of obscurity of style is so evident, that one might expect the first efforts of every young writer directed towards the complete eradication of this fault from his literary performances. Yet, such is far from being the case, laying aside those instances in which obscurity in style arises from simple ignorance, inexperience, carelessness, or confusion of thought, we often find it permitted to disfigure the works of practised writers, which probably arises from the excessive attention paid to some other quality, supposed to be of equal, if not greater importance—some "literary hobby" to which everything else is subordinated. Indeed, it would be easy to mention distinguished authors who have been systematic offenders in this point, perhaps from a pedantic idea that obscurity renders their utterances more interesting, or imparts to them an air of importance. But though we may in some rare cases pardon a great genius (a man who has something truly original to say) for his obscurities or affectations, we cannot recommend ordinary people to imitate him. Even in a great writer obscurity of every kind is a serious fault; in a small one it is fatal. Obscurity arises from two causes, or two classes of causes, namely—confusion of thought, and confusion or ambiguity of language. Of course, either or both of these may exist in any particular instance: indeed one often produces or aggravates the other.

At present we shall only offer a few remarks on the two essentials of perspicuity, namely—propriety, and precision of language. It is possible to write an impure or un-idiomatic style, to be somewhat too concise, or somewhat too diffuse; to be extremely complex in construction, or extremely ornate, or bombastic in diction; and yet to make one's meaning perfectly clear. But you cannot do this without propriety and precision in the use of language, without using such words as express your meaning fully and completely, but express nothing more.

Propriety of diction is often confounded with purity. But the two things are quite distinct *Purity* of style consists in the use of such words and constructions as belong to, or are consistent with the idiom of the language in which we write, to the exclusion of all others. But all this may be attended to without securing propriety of diction, which consists in the selection of words most appropriate to those ideas which we intend to convey. These, of course, are in general the words which have been "*appropriated*" or set apart for the expression of the particular ideas, by the usage of good writers. It is plain that a person may avoid the use of all words and idioms that are not English, without using the right words to express his thoughts. It constantly happens, however, that many young persons who can write grammatically, and construct sentences with some skill, fail altogether in the attempt to choose the right word to express a particular idea, or perhaps do not make any such attempt at all, and are not aware that the thing requires an effort. This is especially the case when the ideas to be expressed lie out of the ordinary channel or course of thought which the writer has been accustomed to hear expressed in conversation; or when he wishes to avoid colloquial language and does not know what to put in its place.

It sometimes happens that a person who has perfectly clear and distinct ideas, is more or less incapable of expressing them in intelligible language, but either has really nothing to say, or at least never manages exactly to find out what it is he wishes to express. This latter fault is in some respects worse than the former, and is generally harder to get rid of; but it is no part of our present plan to enter into the consideration of it, or of the remedies for it. Indeed, to do so, would require a distinct treatise. Confusion, or indistinctness in thought is always an indication of mental poverty or want of cultivation of some kind or other. But the varieties of intellectual shortcomings and defects of education are innumerable, and would open up a field too wide for us to enter on. It is enough to remind the learner that it is useless for him to attempt writing until he has something definite to say; knows exactly what that something is, and has arranged his thoughts in such a way as to make them, each and all, as well as their connections, intelligible to other people. With regard to obscurity of language or expressions, properly so called, we must observe in the first place, that various other faults of style may, in different cases, contribute to produce it. It may arise either from undue diffuseness, or excessive brevity. It may be occasioned by extreme complexity in the construction of a sentence, or by simple impurity of diction. It is very often the result of an improper collocation of words or clauses.

Poverty of Vocabulary, in a word, is one of the most common, as it is one of the most serious defects exhibited by novices in the art of composition. This, joined to ignorance of the exact meanings of many words with which they are familiar, will account for most of their violations of the rules of Propriety. These faults can only be overcome by the careful study of standard authors.

In a treatise like the present it is impossible to find space to pursue this subject further. Those who desire more information on this point we must refer to our treatise on *English Composition and Essay-Writing*, in which *Essay-Writing* is discussed in detail, and which contains numerous essays on a great variety of subjects.

WORK.

The student should set apart a certain number of hours each day for regular and systematic work. It is not necessary to divide his time into half hours, and to change his subject every half hour like a school-boy; for often he will hardly have entered on a certain subject when his half hour has expired, and should he take up another subject, the time already spent at this one may, to a certain extent, be lost. When the mind is vigorous is the time to work: when the mind is sluggish or inactive, work, as a rule, makes no lasting impression, and a smart walk or some exhilarating mental or bodily exercise will tend to bring the mental powers to their wonted activity.

The learner should give attention to every subject in the programme; and if he cannot get a friend to read a dictation, he may substitute copying, say, an hour aday. Arithmetic generally requires longer time: English composition, about two essays weekly. Should the student have additional time at command, he may read a work on history or some other useful subject, for the improvement of his general education.

Persons in country districts have often so few educational opportunities that the number of words they have at command to express their ideas on a subject is very limited. Such persons should pay particular attention to the meanings of words, and their proper application in sentences, before they attempt Essay-writing.

SEPARATE ADDITION.

(1.)			(2.)			(3.)		
£	s.	d.	£	s.	d.	£	s.	d.
849673	16	4	774103	7	3	33176	19	1
32	1	3	211	6	8	899217	16	7
783130	2	4	425043	12	0	221129	10	7
947890	0	1	203	1	9	51427	12	10
889416	19	8	914376	15	2	399	5	4
431067	9	8	215	19	1	419732	13	7
64239	2	5	862935	8	1	796904	17	9
756409	11	9	449603	2	5	43199	16	10
752	11	8	6408	19	7	634328	16	8
841263	9	5	813214	2	6	373051	2	8
134131	6	5	398136	19	6	853748	17	9
13257	8	6	133925	4	2	731528	8	9
93276	5	9	77	2	11	3078	4	11
4636	0	11	691	11	9	371140	15	11
31287	14	7	791414	2	4	840563	19	9
52350	17	5	981	3	2	891195	9	8
391	8	7	881528	13	6	73109	12	4
32752	11	3	408	11	4	329	14	9
412356	1	2	234526	1	9	835	0	6
866197	9	8	729374	5	7	769276	17	8
6416	9	4	707319	18	9	973617	3	7
672	1	9	131619	10	10	851397	17	10

SEPARATE ADDITION.

(4.)			(5.)			(6.)		
£	s.	d.	£	s.	d.	£	s.	d.
19763	4	4	74103	16	2	413176	13	1
31232	1	3	50211	6	8	811217	1	8
183139	2	4	125043	9	3	29	0	7
947890	0	11	49203	1	1	614275	8	1
39416	9	8	14376	11	3	86391	4	10
531067	19	8	29215	7	5	410732	1	2
239	2	5	962935	8	9	106904	7	2
756509	0	2	649603	2	5	99	11	10
752	3	3	498	1	1	434321	18	6
941263	9	4	823214	12	6	373041	2	7
234139	18	5	136398	19	8	153748	15	4
313247	8	8	925	4	2	431526	3	1
63276	5	9	63177	2	9	911397	7	1
636	12	4	14691	13	9	971140	15	4
31287	14	7	91414	19	4	410563	17	7
52350	17	8	82971	3	2	95	2	1
10397	14	9	81528	3	6	23109	8	7
32752	15	3	6408	13	0	74321	18	0
12356	1	2	234526	1	10	811835	0	6
466197	11	6	329374	15	7	769276	13	3
826416	9	7	319	4	10	173617	6	2
77	1	10	89316	7	8	397	11	7

ANSWERS.

	£	s.	d.		£	s.	d.
(1)	7211600	19	11	(4)	5494409	4	10
(2)	8256319	0	1	(5)	4809457	5	10
(3)	9832390	15	5	(6)	7981218	8	1

SPECIMENS OF ESSAYS.

In the usual excitement of an examination hall, few candidates can arrange their thoughts upon a subject with sufficient distinctness. We give the following essays of successful candidates, not because of their excellence, but to show what may fairly be expected from competitors.

Given October 1875.

ESSAY OF A SUCCESSFUL CANDIDATE.

The "visit of the Prince of Wales to India" will at once strike every one as an event of much importance to the future government of our great Eastern dependency; and it is a wonder that the former statesmen of our country could not have foreseen the benefits which it is so eminently calculated to confer, both on India and England.

The conquest of India is, perhaps, unparalleled in the annals of any age, or of any country—so complete, so gigantic, and so thoroughly advantageous to the conqueror. And if we trace the history of its gradual conquest we will be more and more surprised at the difficulties which Englishmen had to overcome, and which were, no doubt, often aggravated by their own impatience and rapacity. They not only struggled to obtain a fair and equable commerce with the natives, but when this was effected in some degree, they set up governors, overthrew native rulers, and insulted and domineered over Rajahs who claimed descent from the mightiest monarchs of antiquity.

No conquest can be effected, or will be durable, without much bloodshed; and it may not be expected that India came into our possession without a violent struggle; yet we can easily see how much blood and treasure might have been spared to England had she paid more attention to the affairs of India. The native predilections of India, in common with all Eastern nations, are essentially monarchical; and in direct violation of all their former institutions an English governor was placed in authority over the most self-opinionated princes in the world. These were some of the causes which led to the repeated risings against British power in India.

The visit of the Prince of Wales to India will in all probability have more effect on the native mind than an array of our vast armies marching in insolent parade through the country. It will show native princes that England respects their dignity, and native subjects that they may henceforth regard themselves as standing on an equality with Englishmen.

Again, while the vast resources and varied productions of India are universally admitted, it is a common belief that these treasures are strongly guarded from foreign intrusion by a burning sun and a pestilential climate; but when it is known that one whose life is so precious to the empire at large sees no danger in all this it will dissipate the delusive notion, and still further enhance the value of this splendid possession. B—e.

THE LIBERTY OF THE PRESS.

[Time 2 hours.]

One of the greatest (if not the greatest) characteristics of the age in which we live is the liberty of speech at which the Press of this kingdom has arrived. Freedom of speech is the undeniable right of every Briton; and the Press has claimed for itself and obtained equal liberty of speaking, as it was once expressed, "truth to the people in the hearing of the king, and to the king in the hearing of the people." The value of this liberty cannot be too highly estimated. Without it England could never have attained to the proud eminence she has. It serves to show the people their weakness—and often the weakness of the State—and by pointing out defects thus enables them to insist upon the adoption of such measures as will uphold our ancient prestige. Session after session we have before us the debates on all the great questions before Parliament—a vast difference from the times not far remote, in which only garbled and incomplete reports, very often one-sided, could be had.

It is rather curious to look back and observe how the liberty of the Press has advanced until it has become, if we may so use the term, the handmaiden of the liberty of the subject. It has grown with our Constitution until it has become inseparably entwined with it; and we cannot interfere with the one without endangering the other.

Although we are advocates for the liberty of the Press, we would insist upon a strict censorship being held over it, in order to preserve it from running into extremes. In times of political excitement this censorship ought to be ever on the watch; for then, the minds of the people being inflamed, a stray spark can do incalculable harm. By referring to past years in the history of Ireland, we have too many instances of the truth of this. We have seen how the minds and passions of the unhappy people have been worked upon by the teachings of some of those so-called national journals—which no doubt have an object of their own in view in acting thus—until they are excited to such a degree, that acts of bloodshed and violence are the inevitable consequences, and the poor deluded victims fall before the justly offended law. A strong hand should be held over such publications; it is the bounden duty of every Government to do so. We would also hold a strict hand over private animadversions; that is, remarks on private individuals tending to hurt or wound their feelings, or to injure their worldly prospects. The law deals with cases of this sort: and it is in the power of every one to defend himself from such cowardly attacks.

Nothing can show with greater effect the advantages of liberty to the Press than a glance at the disadvantage which must arise from having a servile or sycophant one. In former times there were cases where the Press was silent during corrupt administrations—when it could not speak, or what was worse, would not speak—until the resources and the very life-blood of the country had been wasted away and consumed. We may well be thankful that such times are gone, never more, we hope, to return. We now live under a mild and gracious Sovereign, guided by a wise and virtuous ministry, who are themselves guided by experience, and know full well that if they wish to preserve the State, one of the most effectual ways is to continue intact the liberty of that great sentinel and monitor of the people—the Press. S.

THE LOSS OF HER MAJESTY'S SHIP "CAPTAIN."

[Given 28th Feb. 1871. Time 2 hours.]

No event since the death of the lamented Prince Consort has cast such a gloom over the whole of Great Britain as the loss of the "Captain." The nation mourned and wept with the relatives and friends of those whose graves were far away in the mighty deep; away where their friends would never have the consolation of erecting memorials over them :—for in the Bay of Biscay they lie buried beneath fathoms of the ocean's waters.

"The 'Captain' with all hands went down in the Bay of Biscay." Such were the brief but dreadful tidings which flashed through the telegraph wires, and which were read by all with sorrow: by the relatives of those who were lost, with that intense sorrow, and overwhelming grief, which some terrible loss alone can excite; by the builders and designers of the vessel with awe and fear; and by the nation at large as the intelligence of any national calamity should be read—with grief and surprise at the mysterious ways of Providence.

The "Captain" was one of the few vessels of the English Navy, built according to the new inventions. About 550 souls were on board when she sailed on her trial voyage; on the voyage which was to decide if the turret ship building was to be introduced into the English Navy. The builders and the nation in general did not for a moment imagine that their pride, and the pride of the English Navy, was a doomed ship. They thought if hard pressed by a storm she would make a better struggle than she did; and never imagined that she would go down like a stone, in a squall. The laughing hundreds who in two short weeks after were widows, orphans, or friendless, did not dream that they gazed for the last time on those they loved.

Everything being ready, all embarked, and the noble-looking vessel steamed out of the harbour amidst the cheers and blessings of thousands. She was never to return, and the crew little thought that they gazed for the last time on the land of their birth.

All went on smoothly and nothing occurred that could in any way indicate to the crew of fortune-hunters and pleasure-seekers the dreadful fate that awaited them. Every day pleasure and revelry became more and more their chief object.

One night after the feasting and pleasures of the day were over, the Captain encountered a storm and made for the land in order to shelter his vessel in some friendly bay. She was in the bay of Biscay, nearing the coast of Spain, when a squall met her and threw her on her side. Then commenced a scene which no tongue can fully describe or pen narrate. All the crew were asleep when the shock awoke them: throwing on a few articles of dress they rushed to the deck in order to save themselves. There the scene was terrific and appalling. Wives clung to their husbands, and children to their parents.. Save us! Save us! was their universal cry. Life was dear now, life in any form, for they were not prepared to die. The thoughts of debauchery and revelry were all forgotten now; and the great thoughts of eternity arose before their minds. Some were about to save themselves by means of the boats, and some by means of planks and spars, but there was no time for the launching of the boats, or jumping overboard with the planks, for the ship suddenly capsized and went down bottom uppermost. All were now immersed in the water and their efforts to save themselves were redoubled. All was unavailing, for all went down save *one* who survived to tell the sad story of their fate A lamentable fate it was, and like the crew of the "Royal George" they will be ever remembered by their fellow-countrymen.

After the grief occasioned by the catastrophe was over several discussions arose as to the cause of the loss of the ship. Some say the cause of her going down was that she was built too high, and the weight of her decks made her unsteady. Be this as it may very few imagined that it would be as it happened, that is, that the "Captain" would become a wreck.

Some of our more feeling fellow-countrymen got up a fund for the relief of those whose supporters perished with the "Captain." The fund is now progressing favourably, and it is my earnest wish that it may continue to do so, in order that it may in some way assuage the grief of the poor sufferers; for no one can tell the sorrow which is felt at the loss of a dear friend until he has had experience of it. Mc.

ORGANIZATION.

Given January, 30th, 1871.

It would be scarcely possible for us to conceive a world uninfluenced by this most essential principle. It would be equally futile for us to attempt to describe the condition of a world so constituted. What imagination, what powers of description, would we need so as to enable us to portray the almost indescribable confusion resulting from such a state of affairs. In the wide realms of nature we find everything created on a highly and wonderfully organized plan; far more perfect than any that man's inventive genius ever led him to produce. It is necessary that every body having many members should be in a high state of organization; so that each member be, to a certain extent, dependent on the other for support, and at the same time capable of independent action, whilst all should be so constituted as to work harmoniously together as a whole. Now such a body having many members, is the human form; in its complex organs we have a wonderful instance of that truly perfectly organized system which pervades the universe. Here, each member possesses the power of either acting by itself or of co-operating with the others to act as if they formed but a single body. In the Army and Navy of any country a very high state of organization is absolutely necessary in order to secure their thorough efficiency when called into active service. We may fairly say that the numerous and disastrous defeats sustained by the French armies have been caused, in no small degree, by their want of a thoroughly organized military system. On the other hand, there can be but little doubt that to their splendid system of military organization the Prussians, in a great measure, owe those brilliant and astounding victories which have had the effect of raising Prussia to the position of one of the first military powers in Europe.

Experience ever tells us how necessary it is that in our private or official life we should regulate, and, as far as possible, systematize our actions; for we find that we can perform a much greater amount of work when it has been well and carefully arranged beforehand, than if we observe but little system in the manner in which we go through it.

In perusing the history of nations that have risen from comparatively obscure positions, we find that as they gradually rose they began to discover the necessity for a well-organized system, without which they could never hope to retain that position gained for them by their perseverance. R.

HORSE-RACING.

Horse-racing, the practice of matching horses ridden by men against each other, is a national sport too well known to need any elaborate explantation. Suffice it to say that a certain route or course having been marked out, the jockeys use all their skill and knowledge in riding each to bring his horse in first. The first horse, of course, wins the race. According as the race is ridden, with or without fences or jumps, the run is called a "steeple-chase" or a "flat-race." From a very early period horse-racing has been a favourite sport amongst most nations, but especially with the English, whose passion for it has been cultivated to the highest extent; and who are, therefore, such adepts, not only at racing, but also in the act of breeding superior horses, as to be able to compete successfully with all the other racing nations.

Why England, with all her boasted civilization and refinement, has remained so long the slave of this mania, must be a marvel to every thinking man. Almost the only argument that can be brought forward in its favour is, that it tends to keep up and improve the breed of horses. This is evidently absurd: for the breed of cattle, sheep, and pigs have been equally improved during the same period of time, and yet it was not found necessary to get up cow, sheep, and pig races; and if the farmers have been induced to improve these, surely the same inducement would also make them pay strict attention to horses. Having set aside this so called favourable argument, let us look for a moment at some of the pernicious effects of horse racing. *Any one* who has ever been at a race, must unhesitatingly admit that human nature is here seen in all its most revolting attitudes —men, women, and children seem under fiendish influence: and swearing, drinking, fighting, gambling, thieving, and not unfrequently murder, are the unhappy results—all restraint seems to have vanished, and conscience to have become inaudible. The men and horses, too, engaged in the racing, are subjected to dangers and distresses which frequently terminate in death; and those who speculate upon the results of the race frequently lose more than they can afford; and are consequently driven to deeds of sin and shame; the very idea of which, otherwise, would never have entered their brains. A melancholy instance of the pernicious effects of horse-racing has been presented to the public eye not long since, in the well-known case of the Duke of Newcastle, who, possessed of a colossal fortune, was, by his cursed propensity for gambling upon horse-races reduced to penury. Many additional instances could be mentioned of the utter destruction not only of individuals, but of whole families, from the reckless folly of indulging in gambling, or of staking one's fortune on the result of a horse-race.

We thus see that, both for time and eternity, horse-racing is most deleterious to the human race; and we most earnestly pray that ere long the veil will be removed that has so long covered the eyes of most civilized nations; that some other national pastime may be introduced, which, while it permits the populace to indulge in harmless amusement, will not subject them to temptations calculated to bring many to a melancholy and deplorable end. N.

Words Likely to be Misspelled.

(*From the Civil Service Spelling-Book.*)

accede
adieu
affright
allege
annals
appal
arraign
assuage
balance
bazaar
benign
bilious
bullion
buoyant
buttress
cabbage
calcine
campaign
camphor
cancel
caprice
carcase or
carcass
atarrh
ceiling
chagrin
chalice
coerce
conscience
contemn
courteous
cupboard
debtor
dipthong
dispense
douceur
earnest
ellipse
essence
excel
façade
flaccid
foible
gazette
gnomon
gymnast
harangue
harass
heinous
hideous
immense
intrigue
judgment
leisure
limner
luscious
malign
memoir
mitre
mortgage

abeyance
accession
achieving
acreage
apartment
appetite
aqueduct
assassin
attorneys
battalion
biassed
capuchin
cavalier
chrysalis
collision
cuirassier
demeanour
dilemma
duellist
eccentric
ecstasy
emaciate
etiquette
feasible
fusilier
garrison
genteelly
heartiness
horrible
Huguenot
hydrogen
icicle
illicit
imprecate
incision
initial
inveigle
Judaism
labyrinth
lassitude
lieutenant
liquefy
logarithm
luscious
maintenance
manœuvre
maritime
massacre
moiety
mortgage
myrmidon
nebulous
nitrogen
nucleus
occurrence
ocular
omniscient
osseous
palatial
paltriness
parallax
parricide
pellucid
perennial
possession
propagate
putrefy
quintessence
raciness
remissness
secrecy
tepefy

Polysyllables.

abbreviate
accelerate
accessible
accommodate
accoutrements
accumulate
acidulate
admissible
affiliate
affidavit
allegory
alleviate
alliteration
amanuensis
ambassador
ammunition
anabaptist
amphibious
analagous
annihilate
anonymous
antipathy
apostasy
apparatus
appreciate
assimilate
belligerent
benefited
cadaverous
cancellate

cauliflower
centesimal
chichanery
chiropodist
coincidence
commiserate
congelation
consuetude
contumacious
cylindrical
delinquency
desperation
deleterious
discernible
disseminate
eccentricity
egregious
eligible
embarrassing
encyclopedia
enthusiasm
ephemeral
exaggerate
farriery
fascinate
ferocity
fragility
gallinaceous
gesticulation
gymnasium
herbaceous
hieroglyphic
illiterate
illegible
indelible
indigenous
inflammation
inoculate
intestacy
juvenescence
laceration
licentiate
litigiously
loquacity
magisterial
meridional
millennium
monasticism
municipal
novitiate
octennial
oscillation
oviparous
palliation
peccadillo
perihelion
philantrophy
planetary
predecessor
pusillanimous
reconcilable
reconnoitre
reminiscence
septennial

ELEMENTARY COMPETITIVE GEOGRAPHY.

ERRATA.

Page 88,	"philanthrophy"	should be	*philanthropy.*
,, 94, line 29,	"W"	,,	*E.*
,, 99, line 18,	"water"	,,	*land.*
,, 117, line 2,	"Boohia"	,,	*Boothia.*
,, 117, line 21,	"artic"	,,	*arctic.*
,, 127, last line,	"Launceston"	should be	*Bodmin.*
,, 129, line 13,	"Thames"	,,	*Thame.*

Geography, which treats of the earth divided into political governments, such as kingdoms, empires and republics, with an account of the moral, political, and social condition of their inhabitants.

Form.—The earth is nearly globular. It is flattened a little at the top and bottom, and bulged about the equator. The length of the shorter diameter, which is its axis, is 7,899 miles, and the length of the equatorial diameter is 7,925 miles; the difference between these two diameters, viz., 26 miles, is called the earth's compression.

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ELEMENTARY COMPETITIVE GEOGRAPHY.

INTRODUCTION.

I.—Geography is a description of the surface of the earth. It is usually considered under three heads: **Mathematical Geography,** which treats of the form, motions, and size of the earth, considered as a planet; **Physical Geography,** which treats of the natural features of the earth's surface; its mountains, plains, rivers, and lakes; its atmosphere, climate, and natural productions; and **Political Geography,** which treats of the earth divided into political governments, such as kingdoms, empires and republics, with an account of the moral, political, and social condition of their inhabitants.

Form.—The earth is nearly globular. It is flattened a little at the top and bottom, and bulged about the equator. The length of the shorter diameter, which is its axis, is 7,899 miles, and the length of the equatorial diameter is 7,925 miles; the difference between these two diameters, viz., 26 miles, is called the earth's compression.

That the earth is round like a sphere or globe has been proved beyond dispute, although when we look around on any part of its surface it appears to be flat, and to meet the sky at some distance from the place on which we stand. Perhaps the best and most convincing proof of the rotundity of the earth is derived from the well-known fact that persons have frequently sailed round it, and are going round it every day. The earth is so very large that the mountains, deep seas, hills, &c., are quite insignificant in comparison.

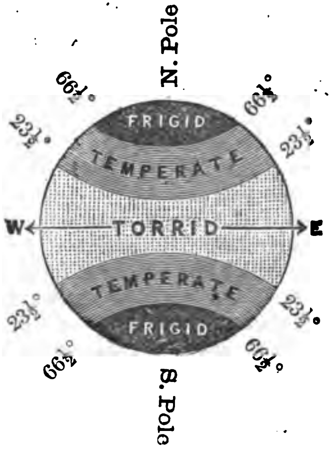
The *axis* of the earth is an imaginary line passing through its centre from north to south. The extreme points or ends of the earth's axis are called the *poles*.

II.—Round the middle of the earth is the circle called the *equator*. Smaller circles, called parallels of latitude, are drawn round the globe parallel to the equator, to indicate the distance of places from that circle.

A circle drawn through any place at right angles to the equator, is called the *meridian* of that place. Its distance is reckoned from the *first* meridian, which is supposed to pass through Greenwich.

On a map of the world latitude is marked on the sides or circumferences of the hemispheres above and below the equator, longitude is marked on the equator; but on maps of countries latitude is marked on the sides, and longitude at the top and bottom.

The following will clearly explain the division of the earth into zones, with their position and respective sizes:—.



Motions.—The sun, moon, and other heavenly bodies appear to move daily from east to west. This appearance is caused by the earth's motion in a contrary direction, west to east. The earth has two motions, diurnal and annual.

The *sensible horizon* is the line which bounds our view by the apparent meeting of the earth and sky.

The *rational horizon* is a similar circle of the heavens' vision, could we see half the globe, and, consequently, half the heavens.

The point in the sky directly over the head of an observer is called his *Zenith*, the opposite point is the *Nadir*.

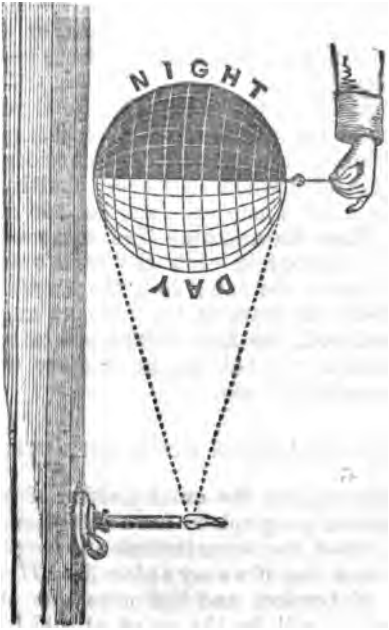
III.—The part of the earth between the Tropic of Cancer on the north, and the Tropic of Capricorn on the south is the *Torrid* zone, so called on account of the excessive heat that always prevails there.

The parts of the earth between the tropics and the polar circles are the *Temperate* zones, north and south, in which there is a moderate climate; and the parts within the polar circles and round the poles, north and south, are the *Frigid* zones, where the most intense cold prevails almost continuously throughout the year.

The parallels at 23½° from the N. and S. poles respectively are called the *Polar Circles*.

If we suppose the entire surface of the earth divided into one hundred equal parts, the torrid zone contains forty, each of the temperate zones twenty-siz, and each of the frigid zones four of these parts.

The diurnal motion is the turning of the earth on its axis from east to west, in 24 hours nearly. This motion is the cause of day and night. The half of the earth on which the sun is shining has day, the other half night; and, as the earth makes a complete revolution on its axis in 24 hours, day and night, taken together, form the same period of time. This will be easily understood from the following simple illustration :—



The sun appears to rise in the east in consequence of the rotation of the earth in the opposite direction, and, consequently, places towards the east will be the first exposed to his rays, and in the proportion of one hour to every 15°, the time at such places being in advance of that at places towards the west. Time is earlier to the E., later to the W. When the sun is on the meridian of any place, or at his greatest altitude, it is twelve o'clock, noon, at that place.

The annual motion of the earth is its revolution round the sun in a period of about 365¼ days; and, as the quarter day is not counted, we must add a whole day every fourth year, which is called a leap year, and has 366 days.

IV.—**The Seasons.**—The cause of the seasons is three-fold—1st, the earth's annual motion round the sun; 2nd, the earth's axis makes with the plane of the orbit an angle of 66½°; and 3rd, the axis always points to the same point in the heavens, or, in other words, moves parallel to itself.

POSITION OF PLACES ON THE EARTH'S SURFACE.

In order to give the exact position of places on the globe, geographers have introduced, as already stated, the terms latitude and longitude. It is evident that if we say a place lies 127 miles due N. of London, and 123 miles due W. of Liverpool it will be the point at which two lines drawn in the direction indicated from the places named, cut each other, which we find is Louth in Lincolnshire. If we are told a place is 52° N. latitude and 1° W. longitude, we see at once it is Buckingham. In the same manner if we are told a place is about 53⅓° N. latitude, and 6⅓° W. longitude, we look at the side of a map, and find the parallel of 53⅓° as near as we can calculate from 50°, the parallel usually given, and the meridian of 6⅓° W., which gives us the Irish capital, Dublin.

It is evident the greatest latitude any place can have is 90°, and the greatest longitude is 180°. It is also plain that at the point the first meridian cuts the equator, there is neither latitude nor longitude.

As the earth moves round or revolves on its axis before the sun with a uniform velocity in a period of 24 hours, and as the earth is a sphere, one half of it will be exposed to the sun's rays, and the other deprived of them in regular succession; that is 360°, being its entire circumference, it will move in one hour the twenty-fourth part of 360, or 15 degrees.

V —As already said we reckon longitude from the Greenwich Observatory; in France and most other countries they reckon from their own principal observatory. A person who goes to St. Petersburg finds when it is only ten o'clock with his watch, which indicates London time, it is twelve o'clock by local time; consequently, he is twice 15° = 30° E. of London: on the contrary, should he visit New York, he will find when his watch showing London time is five in the afternoon, the sun is over his meridian, that is, it is twelve o'clock in New York, which must be five times 15°=75°, west longitude.

VI.—We can generally find the number of miles from one place to another by taking the distance between them on a map, and applying it to the scale of the map. If there be no scale, then this distance applied to the equator, on a map of the world, to the *side* of the map of a particular country, gives the number of degrees of a great circle between them, and we can reduce these degrees to miles by multiplying by $69\frac{1}{10}$, or to "knots," if we multiply by 60. If two places be on the same meridian, we can tell their distance in degrees by adding their latitudes if both be on different sides of the equator, or subtracting their latitudes if on the same side of it. These can be changed into miles by multiplying by $69\frac{1}{10}$. If the places be on the same parallel, the distance between them in degrees is found by adding their longitudes if of different kinds, or subtracting their longitudes if of the same kind. But as these degrees become smaller and smaller as we proceed from the equator towards the poles, they can only be reduced to miles by multiplying by the length of a degree of longitude on that particular parallel of latitude, as found from such a table as the following:—

VII.—Length of a Degree of Longitude.

LATITUDE.	MILES.	LATITUDE.	MILES.
0	$69\frac{1}{10}$	50	44
5	$68\frac{3}{4}$	53	$41\frac{1}{3}$
10	68	55	$39\frac{1}{2}$
15	$66\frac{1}{2}$	60	$34\frac{1}{2}$
20	65	65	29
25	$62\frac{1}{2}$	70	$23\frac{1}{2}$
30	60	75	18
35	$56\frac{1}{2}$	80	12
40	53	85	6
45	$48\frac{3}{4}$	90	0

As an easy illustration of the use of the above table, let us find how far the town of Louth is N. of London, and how far it is E. of Liverpool. On referring to our map, or the index to an atlas, we see Louth is about $53\frac{1}{3}^\circ$ N. latitude; and since London is $51\frac{1}{2}^\circ$, we have the difference $= 1\frac{5}{6}^\circ$, which multiplied by $69\frac{1}{10}$ gives us 127 *m.* very nearly. Again, since Liverpool is 3° W. longitude, and Louth is on the first meridian, and the length of a degree of longitude at $53\frac{1}{3}^\circ$ N. or S. latitude is 41 *m.*, we have the distance of Louth from Liverpool three times 41 or 123 *m.* Again, since Dublin is $6\frac{1}{3}^\circ$ W., and Liverpool is 3° W., we have the distance from Liverpool to Dublin three and one-third times 41, or $133\frac{1}{2}$ miles, and so on.

VIII.—DEFINITIONS.—A *continent* is a large extent of land containing many countries.

An *island* is entirely surrounded by water. An *islet* is a very small island usually uninhabited.

A *peninsula* is surrounded on all sides by water except at one narrow neck, generally called an *isthmus*, with which it is connected to a continent, or larger portion of land.

A *cape* juts out into the sea; when very small it is called a *point;* when elevated or mountainous it is called a *promontory*.*

An elevation or protuberance on the earth at least 1,000 feet above sea-level is called a *mountain*. A *volcano* is a burning mountain; though the distinction is not always observed, smaller elevations are called *hills*.

A *plain* is a flat or level district of considerable extent.

A *table-land* or *plateau* is an elevated plain with steep acclivities on every side.

IX.—A plain is called a *valley* when it lies between two hills; and a small valley is often called a *vale*.

Steppes are extensive sterile plains in south Russia, bordering on the Caspian Sea.

The surface of the earth consists of land and water, in the proportion of three parts water to one part land; and if we compare the north of the equator with the south of it, the proportion of land is as five to one.

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* Various names are applied to headlands according to the shape they assume; on the S. of England, some are called *bills*, as Portland bill, Selsey bill; some are called *mull* or *butt* in the W. of Scotland, and so on.

An *ocean* is the largest body of salt water.

A *sea* is smaller, and usually confined or bounded by land.

An *archipelago* is a sea studded with islands.

A *gulf* runs some distance into the land.

A *bay* has a wider opening, and generally does not penetrate so deeply into the land, but is usually navigable.

A *creek* is a very small bay or inlet.

A *firth, frith,* or *estuary,* is the widening of a river into the sea.

X.—A *channel* is longer and wider than a strait.

A *strait* connects two large bodies of water.

A *sound* is a shallow strait, usually separating an island from the mainland.

A *lake* is entirely surrounded by water.*

A *lagoon* is a kind of brackish lake.

A *river* is a stream of fresh water. When one river flows into another it is called an *affluent* or *tributary.* A *confluent* is a river joining another, after flowing some considerable distance in the same direction with that other. When a river flows through a rugged and hilly district of country, *cascades, cataracts,* and *rapids* are formed.

A *delta,* so called from its triangular shape, resembling one of the letters in the Greek alphabet, is formed at the mouths of rivers.

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* In Scotland it is often called a loch, in Ireland a lough, and in England a mere.

XI.—THE MAP OF THE WORLD.—On standing before the map of the world we see it is divided into two large circles, each containing one-half the globe. The map is drawn in this form to enable us to see the whole world at one view. The circle on the right includes what is called the Eastern Hemisphere, or Old World, which, though one continuous whole, consists of four great divisions, Europe, Asia, Africa, and Australia, with the oceans and islands by which they are surrounded.

The Western Hemisphere includes the continent of America, with the oceans, seas, and islands by which it is surrounded. It is divided into two portions connected by the Isthmus of Panama.

The whole extent of land may be taken at fifty-two millions of square miles. Europe contains three millions eight hundred thousand, or a little less than one-thirteenth of the whole; Asia sixteen millions six hundred thousand, or very nearly one-third of the whole; Africa eleven millions and a half, or a little less than one-fourth of the whole; Australia and the adjacent islands three and a half millions, or less than one-thirteenth of the whole; and America sixteen millions, or nearly one-third of the whole.

XII.—We perceive from the map that the form of the land differs in the two continents. In the Old World, the extension is chiefly from east to west, while in the New it is from north to south. The chief mountain chains, with a few breaks, follow the general direction. In the one case the great plain is north of the Mountain Ridge, in the other, though consisting of two separate plains, it is east of it. America differs from the Old World chiefly in the absence of sandy deserts, and in the admirable adaptation of its great system of rivers and lakes for communication with the interior of the continent.

All the great divisions of the globe differ from one another in many important particulars. **Europe**, the smallest, is more broken up, and more deeply indented, with a longer coast line than the others,which, to a great extent, accounts for the less rigorous cold in winter, and less oppressive heat in the summer. Its rivers, though not so long as those in the other continents, are much more convenient, and better suited for commercial purposes. Its inhabitants being more intelligent, more energetic, and better educated than those of the other divisions, have gradually spread, either by colonization or conquest over most of the globe. With an abundance of the more useful minerals, coal and iron, it has very little of the precious metals, gold and silver. Its plants are not so exuberant or so varied in foliage, nor has it such a variety of animal life as have the other great divisions of the earth.

XIII.—Asia, with three peninsulas in the south, resembling the three of southern Europe, has the most opposite extremes of heat and cold, is possessed by a less energetic race, has the highest mountain, the most extensive plateau, the largest islands adjoining its coasts, and is richer in tropical productions than any of the other divisions. It resembles America in size, and, to a certain extent, in climate. It differs from Africa in its general outline, and, with the exception of Arabia, which has a striking resemblance to the African continent, is much better watered. It possesses governments of the most diametrically opposite character, some parts of it still retaining the ancient patriarchal form, others the most absolute despotism; while others, though absolute in form, are limited in the exercise of their governmental functions, either by the customs or traditions of the country.

XIV.—**Africa**, with sandy deserts and scorching heat, resembles South America only in general outline and the fewness of the islands around its coast; has few bays or openings of any kind, and much of it still remains unexplored. While South America is well watered and abounds in grassy plains, Africa has few large rivers; also their productions differ materially. Both continents project towards the east, and have a bending or indentation towards the west. The heated winds, which sweep over the great deserts of Africa, increase the temperature of southern Europe. It is the most backward division of the globe in civilization, and the least interesting as regards the progress of the human family.

XV.—**America** extends in the meridional direction from N. to S., has every variety of climate, and most luxuriant productions. Its great mountain chains are not at the centre of the land but near the coast; instead of running parallel to the equator, like most of those of the old world, they take a direction almost N. and S.; and its rivers follow the general law, that those flowing eastward are much longer than those flowing westward. Young and energetic, its immense republic is making rapid strides in modern scientific research, and extending its influence far and wide. Unlike Europe, it has its islands and openings much more on the eastern than on its western side. It is strikingly the land of earthquakes and active volcanoes; and its mountains, rivers, lakes, plains and forests are all of colossal dimensions. In no other part of the world have we such a system of fresh water lakes.

Australia, an island a little smaller than Europe, is very compact, with only a few wide bays; rich in the precious metals, it is becoming very quickly inhabited by the immigrants, who flock thither in search of them. The peculiarities of its animals and vegetables are well known. It has very few rivers, most of its surplus waters being carried off by evaporation; in this particular, and also in that of its interior being for the most part unexplored, it resembles Africa. Its rain fall is small, its droughts frequent.

XVI.—The water on the surface of the globe consits also of five great divisions. The **Pacific**, has an area of 70 millions of square miles, is 10,300 miles by 7,200, and was so named from the erroneous supposition that it was almost free from storms. It is quite open to the south, but almost closed to the north, where a narrow strait forms an entrance to the Arctic Ocean. The bottom of the **Atlantic** consists of two valleys and a central ridge. It has a breadth of 3,600 miles at its widest part, and 800 miles at its narrowest (from Norway to Greenland), and an area of 25 millions of square miles. It is open at the south, but partially closed by islands towards the north. It drains an area of 19 millions of square miles, while the Pacific scarcely drains 8½ millions.

The **Indian Ocean** lies north of a line drawn from the Cape of Good Hope to the south of Tasmania.

The **Arctic Ocean** is round the north pole. It is much smaller than any of the others, and so far as we know nearly covered with ice, and almost shut in by the great continents. The **Antarctic Ocean** lies south of a line from the south of New Zealand to Cape Horn, thence to the Cape of Good Hope, by Tasmania to New Zealand.

XVII.—**Mountains.**—In the great continent, a line of continuous mountains may be traced from the north west of Spain almost to Behring Strait, including the Pyrenees, Alps, with their continuation in the Balkhan, Taurus, Hindoo Koosh, Altai, and Stonovoi ranges; while in America, the Rocky Mountains and Andes, with a short break, extend through the whole Continent. Many offshoots and buttresses may be traced in both continents.

The shape of a country seems often to depend on, or follow, the direction of its chief mountain chains. Italy is a remarkable example; Scandinavia, as traversed by the Dofrefield Mountains; Madagascar, Cuba, and Jamaica, among islands, are also examples of this rule.

Volcanoes.—Of all the phenomena which mountains present, certainly the most remarkable are volcanoes, or burning mountains. Four of these are found in Europe: Vesuvius, Etna, Hekla, and Stromboli. Most volcanoes are situated near the sea, and some are under its waters, as is proved by islands and rocks rising in its bosom after earthquakes. The remains of several extinct volcanoes are found in many countries, particularly in France and Rhine Prussia.

XVIII.—Hills.—In a small area, elevations which, in a continent would be termed hills, are called mountains. Another distinguishing feature between hills and mountains is that the former are usually isolated, whereas the latter occur in chains or groups, as already stated. In England, however, the hills, such as the N. and S. Downs and the E. Anglian heights, run a considerable distance.

Plateaux.*—These include all table lands or elevated plains, although many of them bear no resemblance to the *table-like* form.

The most remarkable tableland in the world is in central Asia, including Thibet (15,000 ft. above sea level), and the desert of Gobi. The plateau of Mexico is 7,000 feet high, and that of Quito, in S. America, still higher. The tableland of Spain exceeds 2,000 feet in height.

XIX.—Plains or Lowlands.—In Russia an extended plain stretches from the Arctic Ocean to the Black and Caspian Seas. Crossing the Uralian Mountains we come to another plain of greater extent, sloping to the Arctic Ocean. The Great Desert of Africa is another plain, for the most part of moving sand, on which rain seldom falls. North America contains vast *savannahs,* or plains, in the valley of the Mississippi to the east of the Rocky Mountains; in other parts *prairies,* or natural meadows, alternating with forests. In South America the plains are called, towards the Orinoco, *llanos;* in the centre near the Amazon they are called *selvas,* or forests; and further south, *pampas.* The Russian *Steppes* are barren plains near the mouths of the Dnieper, Don, and Volga, those east of the latter being termed *Lower Steppes.* In Europe the plain of Hungary is second to that of Russia.

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* Professor Ansted limits the term *plateau* to an elevation at least 600 feet in height.

XX.—SPRINGS rise from sheets of water stored underground; and as water will "rise to its level," if the reservoir be in a hill the spring on the lower ground will gush up as a fountain: on the other hand, if the source of the supply be deep below, the water must be brought up by a pump or bucket.

These internal supplies are formed by rainwater or melted snow entering the earth through fissures, or through the soil, till it meets with a stratum through which it cannot penetrate, such as clay; it then rises till it finds an opening, through which it runs out as a spring.

XXI.—RIVERS form the natural drainage of the land, and return to the sea the surplus waters circulating between the ocean, air, and dry land. Besides this, rivers fill many and important offices. They enrich the plains at the expense of the mountains, collect nourishment for plants, carry food to the sea for its inhabitants, and constitute in most cases an easy means of transit. River water contains large quantities of lime, held in solution, from which sea animals build shells and coral islands. The highland between the sources of rivers flowing in different directions, is called a *watershed*, and the extent of the country drained by a river, and its feeders is its *basin*.

In Europe the longest river is the Volga, in Africa the Nile, in Asia the Yang-tse-Kiang, in S. America the Amazon, in N. America the Mississippi, in Australia the Murray.

Many rivers overflow their banks, more especially in the torrid zone, after the wet season or the melting of the snow. This, by a deposit of mud along the valleys through which they flow, causes great fertility. The rate at which a river flows depends on the declivity of the country, the volume and depth of water carried down, and the windings in its course.

XXII.—LAKES are described under four heads:—

If several springs and small streams of water fill up a cavity or basin, and evaporation is not sufficient to dispose of the whole supply, the waters will form for themselves a channel and issue forth as a river. Such is the origin of the Mississippi, flowing from Lake Itasca, of the Volga, which flows from Lake Teruoff, of the Oxus, rising in Lake Victoria in Thibet, and of the Nile, issuing from Lake Victoria Nyanza.

Another class of lakes consists of those which occur in the course of a river, as the Sea of Galilee along the Jordan, the Albert Nyanza along the Nile, Allen, Ree and Derg in the line of the Shannon. The waters of both these kinds of lakes is always fresh.

A third class consists of lakes which have streams running into them and have no outlet visible, such as the Dead Sea. These are for the most part salt. The purer parts of the water are taken off by evaporation, or sink into porous beds in their bottom.

Lakes which have no visible outlet, or apparently no water flowing into them, are supplied by springs from below, which compensate for the water lost by evaporation. These are supposed to be craters of extinct volcanoes: lake Albano, near Rome, is a prominent example.

Lakes are always most numerous in mountainous countries, while Lagoons are usually found on flat coasts in tropical climes.

XXIII.—The Ocean has been computed to have an average depth of two and a half miles, and to weigh 309 of our atmospheres. The sea, by its currents, winds, and rainfall, moderates the cold of the frozen and the heat of the torrid zone. It is the treasure-house of the rains and rivers, and the great thoroughfare between distant nations. The action of the waves breaking rocks to pieces, and forming sand for future use in the production of land in other places, is daily going on around our coasts, with ceaseless activity. In distant seas its insects are building up islands—future habitations for man and beast.

The Gulf Stream is the most remarkable of the permanent ocean currents. It is an oceanic river, carrying warm water into higher latitudes, and in connection with it are other currents carrying back its waters, chilled by the frosts and ice of the Arctic Sea. It originates on the African coast, and flows almost directly W. with a breadth of 350 miles, and enters the Caribbean Sea; increasing in temperature under a tropical sun it sweeps through the Gulf of Mexico, out of which it issues an impetuous stream of hot water 600 feet deep, at the rate of some 80 miles a day. It proceeds northwards along the American coast, with an increasing breadth, until, deflected to the west by the banks of Newfoundland, it recrosses the Atlantic, one branch going up between Great Britain and Iceland, while the main stream proceeds S. by the Azores and Spain.

By this current the west side of Europe, and especially Ireland, Cornwall, and the Hebrides receive warmth and moisture. A cold current comes S. from the N. pole, beneath the Gulf Stream, which carries icebergs along with it.

In the Pacific Ocean there is also a great current running W. from the bay of Panama, right across to the Philippine Isles, and, proceeding N., returns along the W. coast of N. America.

A current starts from the bay of Bengal, and, running past Ceylon, passes the Seychelles, and runs between Mozambique and Madagascar to the neighbourhood of the Cape of Good Hope.

XXIV.—**The Tides** are caused by the attraction of the sun and moon. They occur twice each day, or, more strictly speaking, twice every twenty-four hours and fifty minutes. When the tidal wave is out at sea, the waters recede from our shores, and it is *ebb tide,* or *low water.* As this wave strikes the coast when following the moon in her course, it is called *flood tide,* or *high water.* There is another tidal wave at the same time on the opposite side of the earth. At full and at new moon the tide is highest, and is termed *spring* tide; *neap* tide occurs at her quarters.

At Bristol it often rises higher than 40 feet, at Chepstow 50, in the English Channel 12½ feet, and in the bay of Fundy, Nova Scotia, 70 feet. When against the current of a river, as the Ganges, or of one opening into a funnel-shaped channel, as the Bristol, a great wave rolls violently and suddenly, it is called a *Bore;* and this rises 180 feet in the Maranon.

Sometimes, on the west coast of Ireland, and on the Cornish coast, when the air is calm, the sea rolls in great waves. This is called a *ground swell,* and is the effect of a storm raging out in the Atlantic many miles distant. According to the direction in which it is heard, a storm is predicted, or fine weather expected. This ground swell is also felt on other coasts open to the direct waves of the ocean.

XXV.—The Atmosphere is the "aerial ocean" which surrounds the earth on all sides, and at whose bottom we live. It is about 50 miles in height, and has the same weight as an ocean of water would have of the same surface, and 32 feet deep.

The temperature of the atmosphere diminishes as we ascend, and this diminution is consequent on its increased rarity. In the lower regions of the air, the decrease of heat is one degree for 300 feet of ascent; and, consequently, the tops of mountains, even at the equator, are always covered with snow.

The ATMOSPHERE reflects light coming from the sun. If it were not so, total darkness would surround us, except where the sun is actually shining. Twilight is due to the refraction of rays of light in passing through the atmosphere. The air conducts sound in every direction at the rate of 1,142 feet per second. The atmosphere moderates temperature, by the interchange of air between polar and equatorial regions, attended by the condensation of vapour. Had we no atmosphere, we should have no twilight, and instead of the gradual transition in the evening from light to total darkness, and in the morning from darkness to daylight, we should be subject twice a day to the sudden rebound from darkness to sunlight, and *vice versa*. When the sun is not more than 18° below the horizon, his rays, striking into the higher regions of the atmosphere, and being by the clouds and vapours suspended in it are reflected to the earth, causing twilight, which varies in duration according to the season of the year, the latitude of the place, and the state of the atmosphere.

XXVI.—Around the middle of the earth, on account of the sun being always vertical, or nearly so, the air becomes heated and ascends, while the cool air from the colder parts of the earth, north and south, rushes in to supply its place, and gives rise to the most constant and regular WINDS on the surface of the globe, called *trade winds*, so named from their being so favourable to commerce. These extend about 30°

north and south of the equator; on the north of the equator their direction, which is greatly influenced by the rotation of the earth on its axis, is from the north-east, and on the south of the equator from the south-east. Of course, the force and direction of these winds are very much affected by local causes, such as the intervention of high mountains, and changes in the amount of atmospheric pressure. Their course is most permanent and regular in large open seas. The *monsoons* are to a certain extent modifications of the trade winds found in the Indian Ocean; and they shift their direction every six months, according to the position of the sun.

The chief cause of local changes in the direction of the wind is change of temperature. Heat produces expansion of air, which rises and as it were, *overflows* to a place of greater coldness, while the cooler air rushes in from all sides to take its place. In the torrid zone a large portion of vapour is drawn into the air from the sea, and more comes with air currents from different places; and as vapour is lighter than common air, it rises, expands, and is often condensed into clouds and rain: hence the great rainfall here when the sun is vertical.

XXVII.—**Sea breezes** occur in hot climates: the land during the day becomes more heated than the sea, and a current sets in from the water towards the shore. After sunset the land cools more rapidly than the water, and a *land* breeze continues during the night.

Rain is caused by an accumulation of watery vapour in the atmosphere, in consequence of a lowering of the temperature. The aqueous vapour when frozen in its passage downwards through a very cold stratum of air, becomes *hail* or *sleet.*

The Rainfall is now pretty accurately recorded. In mountainous or forest regions it is greater, while in places in the interior of a country far from hills it is smaller than one might expect. Cumberland, Cornwall, and the West Coast of Ireland have a considerable rainfall. The rainfall varies a little from year to year. It is at the following places:—

Place.	Country.	Rainfall.
London . .	England .	21 inches
Paris . .	France . .	21 ,,
Madras . .	India . .	48 ,,
Bombay . .	,, . .	71 ,,
Canton . .	China . .	78 ,,
Vera Cruz . .	Mexico . .	183 ,,
Oporto . .	Portugal .	54 ,,
San Francisco .	California .	21 ,,
New Orleans .	Alabama .	52 ,,
Stye . . .	Cumberland .	198 ,,

Rainless regions are found in both hemispheres. In the eastern they extend in a wide belt across the widest part of Africa, eastward by the Isthmus of Suez, over the Red Sea and Arabia, and, though not continuously, over

Persia and Cabool, terminating in the great desert of Gobi.

In the New World, the rainless belt extends N. and S. through a part of Chili and Peru, and, with an interruption at the Isthmus of Panama, through California and Mexico.

XXVIII.—Climate.—The climate of a place is its prevailing weather, or the usual degree of warmth and moisture at that place, distinguished by the terms cold, wet, salubrious, equable, extreme.

The proximate causes of differences of climate are the heat of the sun, the proximity of the sea, elevation above sea level, the prevailing winds, the position of mountain ranges, currents of the ocean and in the atmosphere, aspect and nature of the soil.

Isothermal (*equal heat*) lines have been drawn round the globe to mark the average annual temperature, but on such lines an *extreme* climate may correspond with an *equable* one.

Places near large bodies of water have a more equable climate than places in the interior of continents in the same latitudes. Ireland has a higher winter temperature than any part of Great Britain, with the exception of a very small district in Cornwall.

The mean temperature of Ireland in January reaches round Cork and Kerry to 42°; on the eastern and central districts of England to the Thames it is but 37°. Hence, the winter climate of the former district is higher by 5° than that of the east and centre of England, the shallow German Ocean having little influence on the latter. Again, London has a winter temperature of nearly eight degrees higher than Vienna, which is three degrees south of it, but in a continental position.

XXIX.—The snow line, that is the height above or on the surface of the earth that marks the freezing point, is higher on the side of mountains looking towards the equator than on the opposite side; but on the Himalaya mountains the higher snow line is northwards, in consequence of the radiation of heat from the central plateau of Asia melting the snow to a greater height than the direct rays of the sun.

Siberia, which slopes towards the north pole, being turned away from the sun's rays, is a striking instance of climatic influence through aspect. The coldest portion of the globe is here about 80° N. latitude, and at 95° E. longitude. It is said to have a mean temperature of 1° Fahrenheit. There is another point in North America about the same parallel, 80°, and 100° W. long., which is said by some to have even a lower temperature. These points are denominated poles of cold.

XXX.—The **mariner's compass**, so useful to seamen, is formed of a needle or a small piece of steel magnetized, and balanced on a pivot. Its N. end points at Greenwich 24° W. of the true north. This deviation from the actual north is called the *variation* of the needle. Now, as the needle always points in the same direction, it is invaluable to sailors, as t is an unerring guide of their vessel's course by night and by day. The north magnetic pole is on the W. of Boohia Peninsula in N. America, and was found out in 1831. The place was visited in 1859 by M'Clintock, the discoverer of the North-West Passage.*

XXXI.—Baron Von Humboldt divides the globe into eight vegetable zones.

1. *Equatorial*, or region of the palm and bananas, extending about 15° on each side of the equator.

2. The *tropical zone*, or region of tree-ferns and figs, from 15° to the tropics.

3. The *sub-tropical zone*, or region of laurels and myrtles, from the tropics, to 34°.

4. The *warm temperate zone*, or region of evergreen trees, from 34° to 45°.

5. The *cold temperate zone*, or region of diciduous trees, from 45° to 58°.

6. The *sub-arctic zone*, or region of pines, from 58° to the arctic circle.

7. The *artic zone*, or region of *andromedas* and alpine rhododendrons, from the arctic circle to 72° North and South Latitude.

8. The polar zone, or region of alpine plants, gentians, ranunculus, etc.; also lichens, mosses, from 72° to the utmost limit of vegetation.

Similar changes of vegetation are found in ascending from the base of some mountains to their summits, such as the Andes, the peak of Teneriffe, and Mount Etna.

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* It is now established that there are four magnetic poles; and the periodic variation of magnetic force is chiefly due to electrical currents near the earth's surface.

EUROPE.

I.—**Europe**, extends from Cape Nordkyn in Norway to Cape Matapan in Greece, 2,400 miles ; and from Cape St. Vincent in Portugal to the mouth of the Kara River in the N.E., 3,400 miles. Its population is 309 millions. Irrespective of islands, it lies between the parallels of 30° 1′ and 71° 6′ N. latitude, and between the meridians of 9½ W. and 68½ E. longitude. It is bounded on the N. by the Arctic Ocean; on the W. by the Atlantic Ocean; on the S. by the Mediterranean Sea, the Sea of Marmora, the Black Sea, Sea of Azof, and the Caucasian Mountains; on the E. by Asia, from which it is separated by the Ural Mountains, Ural River, and Caspian Sea.

II.—TABULAR VIEW OF THE EUROPEAN STATES.

States.	Area.	Population.	Capital.
British Isles (*k*).	122,000	33,450,108	London.
France (*r.*)	211,850	36,250,000	Paris.
Spain (*k.*)	182,760	16,550,000	Madrid.
Portugal (*k.*)	36,510	4,285,000	Lisbon.
Italy (*k.*),	114,500	27,500,000	Rome.
Greece (*k.*),	19,950	1,457,500	Athens.
Turkey (*e.*)	203,630	15,000,000	Constantinople
Austria (*e.*),	227,235	37,723,000	Vienna.
Germany (*e.*)	243,000	43,000,000	Berlin.
Belgium (*k.*),	11,315	5,336,000	Brussels.
Holland (*k.*),	10,900	3,812,650	The Hague.
Denmark (*k*),	14,500	1,931,000	Copenhagen.
Sweden and Norway (*k*),	291,900	6,200,100	Stockholm.
Russia (*e*),	2,043,400	71,745,500	St Petersburgh
Switzerland (*r*),	15,235	2,669,000	Berne.

(*k.*) Kingdom. (*r.*) Republic. (*e.*) Empire.

In addition there are the Republics of *Andorra* on S. side of the Pyrenees, and *San Marino*, in the Appennines.

III. **Surface**—Generally speaking Europe is mountainous and hilly in the N.W., the centre, and the S., and flat everywhere else. The *Great Plain*, occupying an area of about 2½ millions of square miles, extends from the Ural Mountains to the Baltic, and including Belgium and Holland, and N. Germany, reaches across the N. of France almost to the Atlantic.

The following smaller plains may also be enumerated :—There are three plains, watered by the Danube—that of Bavaria on the Upper, the greater and less Hungarian plains on the Middle, and that of Wallachia and Bulgaria on the Lower Danube. The *Plain of Lombardy*, traversed by the Po, is 250 miles long, and 50 broad, and is exceedingly productive. The great plain divides the European mountain system into two parts, the Scandinavian N. of it, and the Alpine system S. of it.

IV. **Seas.**—The White Sea, N. of Russia, the Baltic, North Sea, Mediterranean, Archipelago, Marmora, Black Sea, Sea of Azov, the Irish Sea, the Skager Rack, and Cattegat.

Islands.—Nova Zembla, Spitzbergen, and Vaigatz, N. of Russia ; the Loffoden Isles, N.W. of Norway ; Zealand, Funen, Langland, Aland, Oland, and Gothland in the Baltic ; Iceland, the Farôe, and British Isles in the Atlantic. The Balearic Islands, Sardinia, Corsica, Elba, and Malta in the Mediterranean. The Ionian Isles, W. of Greece, Negropont, and many others on the E. of Greece.

Peninsulas.—Norway and Sweden, Jutland, Spain and Portugal, Italy, the Morea, and the Crimea.

Isthmuses.—The Isthmus of Corinth, in Greece, and Perekop in S. Russia.

V. **Capes.**—The *N. Cape* on the Isle of Mageroe, *Nordkyn* in Finland, the *Naze* S. of Norway, the *Skaw* N. of Denmark, Cape *Wrath* N. of Scotland, the *Land's End* in S. W. of England, *Malin Head* N. of Ireland, Cape *La Hogue* N. of France, *Ortegal* and *Finisterre* in the N.W. of Spain, Cape *St. Vincent* in Portugal, *Trafalgar* and *Palos* in Spain, *Passaro* in Sicily, *Spartivento* and *Otranto* in Italy, *Matapan* and *Angelo* in Greece.

Gulfs.—Venice, Lyons, Genoa, Taranto, Squillace, and Lepanto, in the Mediterranean; and the Gulf of Bothnia, Finland, and Riga, in the Baltic; St. Malo in France, Corinth in Greece.

Bay.—The Bay of Biscay on the W. of France is the only one of importance.

Straits.—The *Sound* between Sweden and the island of Zealand, the *Great Belt* between this isle and that of Funen, the *Little Belt* between Funen and Denmark proper; *Dover*, between the North Sea and English Channel; Gibraltar, South of Spain; *Bonifacio*, *Messina*, *Otranto*, *Dardanelles*, *Bosphorus*, and *Yenikale*, in the Mediterranean and its branches.

VI. Mountains.—The *Alps*, in Italy, Switzerland, France, and S. Germany; the *Apennines*, which run down Italy; the *Pyrenees*, separating France from Spain; the *Balkan* Mountains in Turkey; the *Carpathian* Mountains in Austria; the *Erz* and *Sudetic* in Central Germany; the *Dofrine* or *Dofrefield* Mountains, between Norway and Sweden; the *Ural* Mountains E. and the *Caucasian* Mountains S. of Russia.

Table-lands.—The only real plateau in Europe is in central Spain, extending over 100,000 square miles, and varying from 2,000 to 3,000 feet in height.

VII. Rivers.—Generally the rivers of Europe either flow towards the S.E. or N.W. The principal rivers are: The *Ural* and *Volga* flowing into the Caspian Sea, the *Don* into the Sea of Azov, the *Dnieper*, *Dniester*, and *Danube*, into the Black Sea; the *Adige* and *Po* into the Gulf of Venice; the *Tiber*, *Rhone* and *Ebro*, into the Mediterranean; the *Douro*, *Tagus*, *Guadiana*, and *Guadalquiver* into the Atlantic; the *Garonne* and *Loire* into the Bay of Biscay; the *Seine* into the English Channel; the *Rhine*, *Weser*, and *Elbe* into the North Sea; the *Oder*, *Vistula*, *Memel*, and *Duna* into the Baltic; the *Onega* and N. *Dwina* into the White Sea; the *Thames*, *Severn*, *Shannon*, *Blackwater*, *Forth*, and *Clyde* in the British Isles.

Lakes.—The principal Lakes are:—*Geneva*, *Lucerne*, *Neuchatel*, and *Constance* in Switzerland; Lakes *Maggiore*, *Garda*, *Como*, and *Lugano* in

Italy; Lakes *Neusiedler-see* and *Platten-see* in Austria; Lakes *Wener*, *Wettern*, and *Malar*, in Sweden; lakes *Ladoga*, *Onega*, *Peipus*, *Enara*, *Saima*, and *Ilmen* in Russia.

VIII. **Climate.**—The climate of Europe is not so extreme as that of the other continents. Roughly, Europe may be divided into three climatic zones: (1) The *Northern*, lying N. of the parallel of 55°, in which the severe and boisterous winter lasts nearly nine months, summer the remainder, with a few days of spring and autumn intervening; in the summer the heat is powerful, and vegetation rapid. (2) The *Central*, from 45° to 55°, has the four seasons distinctly marked with a gradual succession from one to the other, winter longer than summer and from W. to E. its intensity increasing. (3) The *Southern*, S. of the parallel of 45°, has very little snow, long droughts, and great heat in summer.

The rainfall decreases towards the E. On the coast of Portugal the usual fall is more than 100 inches, and only 15 in the E. of Russia. The most rainy part of Europe is Coimbra, where more than 200 inches is the average annual fall. In the S. the rain generally falls in winter; in the W. and N.W. in autumn; in the E. and central countries in the summer.

IX. **Inhabitants.**—With the exception of a few tribes at the extreme N., and the Magyars of Hungary, all the inhabitants of Europe belong to the Caucasian race. In reference to their language this race is divided into three great branches; those whose languages are in a great measure derived from the Latin, such as the French, Spanish, Italians, and Portuguese; secondly, the Teutonic, which includes most of Germany, the British Isles, Norway, Sweden, Denmark, and the Netherlands; thirdly, the Slavs, represented by the dialects of Russia, Poland, much of Austria, and some provinces in Turkey. A recent computation gives 80 millions of Slavs. The population is densest in Belgium, England, and Holland.

X. **Religion.**—The principal creeds of Europe are three—Roman Catholic in the S.W.; Greek Church in the E.; and Protestant in the middle and N.W. The countries in which very little mixture is found are, Spain, Portugal, and Italy, being almost exclusively Roman Catholic; Norway and Sweden and England almost exclusively Protestant; Russia contains about 8 millions of Catholics, 4 millions Protestants, 2½ millions Mahomedans, 1½ million Jews, and 1 million Armenians. All the other European countries are mixed, Turkey alone representing Mahomedanism.

XI. **Industries.**—The prevailing industry in most countries of Europe is agriculture, chiefly consisting in tillage, cattle rearing, and dairy farming. *Mining* forms an important industry in Great Britain, Belgium, E. France, Hungary, and Sweden. *Manufactures* of coarse woollens for home use are carried on in all countries; *linens* in France, the Low Countries, British Isles, Hanover, Silesia, and Moravia; *iron* goods in the British Isles and Belgium; *cordage* and *sailcloth* in all large seaports; *beer* in most countries, but particularly in Bavaria, British Isles, and the city of Strasbourg; *grain* is largely exported from the countries bordering on the S. of the Baltic and from S. Russia; *olive oil* from N. Italy; the production of *wines* constitutes an important industry in France and Spain; *dried fruits* in Greece, Spain, and Portugal, and other southern lands.

XII. **Animals.**—The progress of civilization and the increase of population have rendered extinct many species of animals, which were once numerous. The *horse* was fleetest and best in Spain, having been introduced by the Arabs: but there the breed has degenerated. The heaviest horses are found on the shores of the North Sea; Holland, Switzerland, and England, have splendid draft horses. Corsica has the smallest horses, the N. of Sweden the largest, England the nicest and swiftest. The *mule* is used in hilly countries, particularly Spain; and the *ass*, though much used in Ireland and many other countries, is biggest in Spain and Malta. The *sheep*, of which there are many varieties, is everywhere. The *goat* in mountainous districts; the *hog* is used extensively for food, except in Turkey; the *reindeer* is found in Lapland; the *dog* everywhere is man's faithful companion.

Of Wild Animals, two species of bear are found; the brown bear of the mountains of

Southern Europe, and the polar bear of N. Europe. The lynx and wolf, wild cat, fox, and otter are also found widely distributed. Of the *rodentia* we have beavers, squirrels, marmots, rats, and mice. Monkeys are found wild on the rock of Gibraltar.

XIII. **Minerals.**—There is very little gold, silver, or precious stones in Europe, but abundance of iron, coal, and other useful metals is found. *Iron* is found in the British Isles, Belgium, France, Russia, Germany, Sweden, Italy, Spain, and Austria. *Coal* is found in the three first-named countries, also in Hungary Sweden, and Germany. *Quicksilver* is found in S.W. of Austria, in Spain, and Bavaria. *Copper* is found in the British Isles, Russia, Hungary, Sweden, Norway, Turkey, Germany, and Spain. *Lead* in Spain, British Isles, Austria, France, and Norway. *Tin* in England, Saxony, and Spain. *Zinc* in Great Britain, Belgium, and Germany. *Salt* in Russia, Austria, France, Spain, Portugal, England, Ireland, Italy, Greece, and Sweden. England produces ten times as much coal as both Belgium and France, the next most productive countries.

XIV. **Vegetables.**—In the south the vegetation resembles that of Africa, the vine, the date, the prickly pear, castor oil plant, rice, cotton, sugar cane, maize, fig, olive, and orange being produced. Almost all these either disappear or languish at about the parallel of 40°; then comes the vine, which more northward is followed by wheat and other grain, also by hardy trees, such as the oak and birch, with rich grazing pastures, which are almost unknown in Southern Europe. In the extreme N. vegetation ceases, and the ground is covered with perpetual congelation.

Note.—The Great Powers are:—Great Britain, France, Germany, Russia, and Austria; the second rate are—Italy, Turkey, Belgium, Holland, Sweden, Norway, and Spain.

XV.—RIVERS WITH CHIEF TOWNS ON THEM.

Volga.—Astrakhan, Saratov, Kazan, Nijni-Novgorod.
Danube.—Ismail, Galatz, Belgrade, Buda-Pesth, Vienna, Ulm.
Rhone.—Avignon, Lyons, Geneva.
Tagus.—Lisbon, Toledo.
Garonne.—Bordeaux, Toulouse.
Loire.—Nantes, Tours, Orleans, St. Etienne.
Seine.—Havre, Rouen, Paris.
Scheldt.—Antwerp, Ghent, Cambrai.
Rhine.—Leyden, Utrecht, Cologne, Bonn, Coblentz, Mannheim, Strasbourg, Basle.
Elbe.—Gluckstadt, Altona, Hamburg, Magdeburg, Dresden.
Oder.—Stettin, Frankfort, Breslau.
Vistula.—Konigsberg, Warsaw, Cracow.
Niemen.—Memel, Tilsit, Grodno.

ENGLAND AND WALES.

I.—The BRITISH EMPIRE consists of England, Wales, Scotland, and Ireland, with the adjacent Islands, together with the colonial possessions, India, Australia, South Africa, the Dominion of Canada, New Zealand, Jamaica, and many other places.

England is bounded on the North by the Solway Frith and Cheviot Hills; E., by the North Sea, or German Ocean; on the S., by the English Channel; and on the W., by the Irish Sea and St. George's Channel. England and Wales have an area of nearly 58,000 square miles, and a population of 24 millions. The length from Berwick to the Lizard Point, is 420 m.; from the Land's End, to Lowestoft Ness, is 360 m.; the coast line is about 2,000 m. in length.

II.—Of the 40 English Counties 20 are on the coast and 20 inland. Of the 12 Counties of Wales only 3 are inland.

Six South Coast Counties.

County.	Capital.	Situation.
1. Kent	Maidstone	Medway.
2. Sussex	Lewes	Ouse.
3. Hampshire	Winchester......	Itchen.
4. Dorsetshire	Dorchester	Frome.
5. Devonshire	Exeter City......	Exe.
6. Cornwall	Launceston	Tamar.

Seven East Coast Counties.

County.	Capital.	Situation.
1. Northumberland.	Newcastle	Tyne.
2. Durham	Durham City	Wear.
3. Yorkshire	York City	Ouse.
4. Lincolnshire	Lincoln City	Witham.
5. Norfolk	Norwich City	Wensum.
6. Suffolk	Ipswich	Orwell.
7. Essex	Chelmsford	Chelmer.

III.—Seven West Coast Counties.

1. Somersetshire	Taunton	Tone.
2. Gloucestershire	Gloucester City	Severn.
3. Monmouthshire	Monmouth	Wye.
4. Cheshire	Chester City	Dee.
5. Lancashire	Lancaster	Lune.
6. Westmoreland	Appleby	Eden.
7. Cumberland	Carlisle City	Eden.

Six North Midland Counties.

1. Derbyshire	Derby	Derwent.
2. Nottinghamshire.	Nottingham	Trent.
3. Salop	Shrewsbury	Severn.
4. Staffordshire	Stafford	Sow.
5. Leicestershire	Leicester	Soar.
6. Rutlandshire	Oakham	Oakham Canal.

IV.—Seven Midland Counties.

County,	County Town.	Situation.
1. Herefordshire ...	Hereford	Wye.
2. Worcestershire ...	Worcester City.	Severn.
3. Warwickshire ...	Warwick	Avon.
4. Northamptonshire	Northampton...	Nen.
5. Huntingdonshire.	Huntingdon ...	Great Ouse
6. Bedfordshire ...	Bedford	Great Ouse.
7. Cambridgeshire...	Cambridge	Cam.

Seven South Midland Counties.

1. Oxfordshire	Oxford City ...	Thames.
2. Buckinghamshire	Aylesbury	Thames.
3. Hertfordshire ...	Hertford	Lea.
4. Wiltshire	Salisbury	Avon.
5. Berkshire	Reading	Kennet.
6. Middlesex	London	Thames.
7. Surrey	Guildford	Wey.

V.—Six North Wales Counties.

1. Flintshire	Mold	Alyn.
2. Denbighshire ...	Denbigh..........	E. of County
3. Carnarvonshire .	Carnarvon	Menai Strait
4. Anglesea	Beaumaris	Menai Strait
5. Merionethshire...	Dolgelly	Mawddach.
6. Montgomeryshire	Montgomery ...	Severn.

Six South Wales Counties.

County.	County Town.	Situation.
1. Radnorshire	Radnor.	E. of County
2. Cardiganshire ...	Cardigan	Teify.
3. Pembrokeshire ...	Pembroke	Milford Haven.
4. Carmarthenshire.	Carmarthen ...	Towy.
5. Glamorganshire .	Cardiff	Taff.
6. Brecknockshire .	Brecknock	Usk.

VI.—ISLANDS—

On the East, Holy, Farn, and Coquet Islands, off Northumberland; Sheppey, and Thanet, at the mouth of the Thames.

On the South, Isle of Wight, the Channel Islands, viz. Jersey, Guernsey, Alderney, Sark.

On the West, Scilly Islands, Lundy Island, Bardsey Island, Anglesea, Holy Island, Walney Island, and the Isle of Man.

CAPES—

On the East, Flamborough Head, Spurn Head, Lowestoft Ness, Naze, Foulness, N. Foreland, S. Foreland.

On the South, Dungeness, Beachy Head, Selsea Bill, St. Catherine's Point, Needles, St. Alban's Head, Portland Bill, Start Point, Black Head, the Lizard.

On the West, Land's End, Hartland Point, St. Goven's, St. David's, and Strumble Heads, Braich-y-Pwll, Holy Head, Great Orme's Head, and St. Bee's Head.

VII.—BAYS AND OPENINGS—

On the East, mouths of the Tyne and Tees, Bridlington Bay, Mouth of the Humber, the Wash, Mouth of the Thames.

On the **South**, Portsmouth Harbour, Southhampton water, Spithead, the Solent, Poole Harbour, Tor Bay, Plymouth Sound, Falmouth Harbour, and Mount's Bay.

On the **West**, Barnstaple, Swansea, and Carmarthen Bays, Bristol Channel, Milford Haven, St. Bride's and Cardigan Bays, Menai Strait, Mouths of the Dee, Mersey, and Ribble, Morecambe Bay, and the Solway Frith.

LAKES—

Are mostly in **Cumberland** and **Westmoreland**; Windermere, the largest is 10 miles long and 1 mile broad—Ulleswater, Derwentwater, Coniston, and Buttermere. In **Wales**, Bala Lake, 4 miles long and ½ a mile broad.

VIII.—PLAINS—

The Plain of York, the Cheshire Plain, the Central Plain; the Eastern Plain lying in Norfolk, Suffolk, and Essex; the Fen district around the Wash, and the Salisbury Plain in Wiltshire.

RIVERS.

On the East: Tyne, Wear, Tees, in and bordering Durhamshire; Yorkshire Ouse and Trent, which flow into the Humber. Into the Wash, the Witham, Welland, Nen, and Great Ouse; in Norfolk, the Yare; in Suffolk, the Orwell; in Essex, the Chelmer; then the Thames and Medway.

On the South; the Sussex Ouse, the Itchin, the Salisbury Avon, Stour, Exe, and Tamar.

On the West: the Torridge, Parrot, Bristol Avon, Severn, Wye, Usk, Taff, Teify, Dee, Mersey, Ribble, Lune, Derwent, and Eden.

IX.—TABLE OF THE PRINCIPAL RIVERS.

River.	Rises in	Counties.	Falls into
1. Tyne,	Cheviot Hills & Cross Fell,	Northumberland	North Sea or German Ocean.
2. Wear,	Pennine Mountains,	Durham	North Sea.
3. Tees,	Cross Fell,	Durham	North Sea.
4. Yorkshire Ouse,	Pennine range,	Yorkshire	River Humber.
5. Trent,	Staffordshire Heights,	Stafford, Derby, Notts, and Lincoln	River Humber.
6. Witham,	Rutlandshire,	Rutland, Northampton	The Wash.
7. Welland,	Northamptonshire,	Northampton	The Wash.
8. Nen,	Northamptonshire,	Northampton, Cambridge	The Wash.
9. Great Ouse,	Northamptonshire,	Buckingham, Bedford, Huntingdon, Norfolk	The Wash.
10. Thames,	Cotswold Hills,	Touches nine counties	North Sea.
11. Severn,	Plynlimmon,	Montgomery, Salop, Worcester, Gloucester	Bristol Channel.
12. Wye,	Plynlimmon,	Radnor, Hereford, Monmouth.	Bristol Channel.

X.—ENGLISH MOUNTAINS.

Mountain.	Position.	Summits.	Remarks.
1. Pennine **Chain**,	Runs centrally from the borders of Scotland into Derbyshire.	Cross Fell 2,927 feet ; Whernside 2,384 ; Ingleborough 2,361 ; Pennygant 2,976.	This is the greatest range in England. It is 260 m. long.
2. **Cumbrian Group**,	In the counties of Cumberland and Westmoreland,	Scafell 3,229 ; Helvellyn 3,055 ; Skiddaw 3,022,	These form a compact circular mass, not in ranges.
3. **Cambrian Mountains**,	Stretch through Wales from Carnarvon to St. David's Head,	Snowdon 3,590 ; Cader Idris 2,959 ; Plynlimmon 2,463,	This group includes all the Welsh mountains.
4. Cornish Heights, or Devon Mountains,	Extend from Barnstaple Bay to Land's End,	Brown Willy 1,364, midway between Bodmin and Launceston,	This range, though a considerable length, does not rise high.

Note,—Compared with Scotland, England is a level country. Scafell is the highest English peak ; Snowdon the highest Welsh mountain.

XI.—ENGLISH HILLS.

Hill.	Summits.	Position.	Remarks.
1. North Downs,	Inkpen, 1,011 feet	Hants, Surrey, and Kent,	These chalk hills run S. of and almost parallel to the Thames.
2. South Downs,	Chanetonbury Hill 814 ft.	Hants and Sussex,	Stretch from Salisbury Plain to Beachy Head.
3. Chiltern Hills,	Wendover Hill 905 ft.	Bucks,	They run from the S. of Wallingford direct to Dunstable.
4. East Anglian,	Gog Magog Hills 302 ft.	Norfolk & Suffolk,	They traverse the S. of Cambridge, N.W. of Suffolk, and W. of Norfolk.
5. Dorset Heights	Pillesden Pen 932 ft.	Dorsetshire,	Stretch from Wilts to Devon through the N. W. of Dorset.

NOTE—There are several other hills: in Somerset, the *Quantock* and *Mendip*; in Gloucester the *Cotswold* in Worcester, the *Malvern* hills: the *Wolds* in Yorkshire and Lincolnshire, &c.

XII.—RIVERS.—TABLE 2.

River.	Basin.	Length.	Towns on its banks.
1. **Tyne**, …………	1,100	90	Tynemouth, N. & S. Shields, Newcastle, Hexham.
2. **Wear**, …………	460	60	Sunderland, Durham, Bishop Auckland.
3. **Tees**, …………	740	80	Middlesborough, Stockton, Darlington.
4. **Ouse**, …………	4,200	135	York, Selby, and Goole. [In its basin, Leeds (*Aire*), Doncaster (*Don*), Ripon (*Ure*), Barnsley (*Dearne*), Sheffield (*Sheaf*).
5. **Trent**, ………	4,000	170	Gainsborough, Newark, Nottingham, Burton, Stoke.
6. **Witham**, ……	1,000	60	Boston, Lincoln, Grantham.
7. **Welland**, ……	700	50	Spalding, Stamford.
8. **Nen**, …………	1,100	55	Wisbeach, Peterborough, Northampton.
9. **Great Ouse**, …	2,900	90	Kings Lynn, Ely, Huntingdon, Bedford, Buckingham.
10. **Thames**, ……	6,100	210	Gravesend, Woolwich, Greenwich, London, Richmond, Eton, Windsor, Henley, and Oxford.
11. **Severn**, ……	4,450	220	Gloucester, Tewkesbury, Worcester, Stourport, Bridgenorth, Shrewsbury, Welshpool, Newtown.
12. **Wye**, ………	650	130	Chepstow, Monmouth, Hereford, Builth.

XIII.—ENGLISH INDUSTRIES.

There are four great industries, agriculture, mining, manufacturing, and commerce. Agriculture is pursued in two great branches, tillage and grazing. Our chief crops are wheat, oats, barley, rye, potatoes, turnips, beans, peas, fruits, vegetables, hemp, and flax. *Wheat* and the other grains are raised in all the tillage counties, Norfolk, Cambridge, &c. *Hops* are extensively grown in Kent, Surrey, and Hereford. *Vegetables* in the neighbourhood of all our great towns. *Fruits* chiefly in Kent and the Southern counties. Notwithstanding the advanced stage of our agriculture, yet we must import immense quantities of wheat from various parts of the world.

MINING.

The chief minerals are Coal, Iron, Copper, Lead, Tin, and Rock Salt. Our *Coal* is distributed in 17 fields, three of which are in Wales; *Iron* is chiefly found mixed with the coal; *Copper* is found in Wales, Devon, and Cornwall; *Lead*, in Flint, Cumberland, and many other counties; *Tin* in Cornwall chiefly; *Rock Salt* in Worcestershire and Cheshire.

XIV.—MANUFACTURES.

Our three great manufactures are Cotton, Iron, and Woollens. The seat of the first being Manchester and the towns around, and the chief seats of the Woollens being at Leeds and Bradford in the West Riding, and in the West of England, at Frome Trowbridge, Bradford, and Stroud. *Iron* is found on all the coal fields, but chiefly at Merthyr Tydvill, Wolverhampton, Dudley, Rotherham and Middlesborough.

XV.—MANUFACTURING TOWNS.

Town.	County.	Situation.	Trade.
Manchester.	Yorkshire.	Irwell.	Cotton.
Birmingham.	Warwick.	Rea.	Iron and Metal.
Leeds.	Yorkshire.	Aire.	Woollens.
Sheffield.	Yorkshire.	Sheaf.	Cutlery.
Bradford.	Yorkshire.	——	Woollens.
Stoke.	Staffordshire.	Trent.	Potteries.
Wednesbury.	Stafford.	Sow.	Iron and Coal.
Sunderland.	Durham.	Tees.	Coal.
Merthyr-Tydvill,	Glamorgan.	Taff.	Iron and Coal.
Leicester.	Leicestershire	Soar.	Stockings.
Nottingham.	Nottingham-shire.	Trent.	Lace, Boots and Shoes
Preston.	Lancashire.	Ribble.	Cotton.
Bolton.	Do.	Irwell.	Do.
Oldham.	Do.		Do.

XVI.—OTHER TOWNS.—Greenwich (*Thames*) is noted for its observatory; Brighton is a fashionable watering place; York and Canterbury cities are ecclesiastical capitals; Exeter, Winchester, Worcester, Carlyle, and Durham are important cathedral cities; Oxford and Cambridge are the seats of our old universities; Maidstone is the centre of the hop trade; Crewe and Derby are railway centres; Doncaster, Newmarket, and Epsom have races.

XVII.—OTHER MANUFACTORIES.

Silk at Spitalfields in E. London, Macclesfield in Cheshire, Coventry in Warwick, and at Derby.

Flannels at Halifax and Rochdale in Yorkshire, at Newton and Welshpool in N. Wales.

Blankets at Witney in Oxfordshire and Dewsbury in York.

Carpets Kidderminster in Worcestershire, Halifax in Yorkshire, and at Louth in Lincolnshire.

Leather at Bermondsey in S. London, Leeds, Northampton, and Stafford.

Ships at Birkenhead, Sunderland, London, Grimbsy, Shields, Fleetwood, and Hull.

Earthenware at Burslem, Hanley, and Stoke in Staffordshire.

Lace at Nottingham, Derby, and Leicester.

Hosiery at Nottingham, Derby, Bradford, and Leicester.

XVIII.—GREAT SEAPORT TOWNS.

PORTS.—*London* (3,489,804.) (*Thames*) is the greatest port in the world. It is the capital of the British Empire, the seat of our Parliament, the residence of royalty, and is the largest and wealthiest town on the face of the globe.

Liverpool (493,346.) (*Mersey*) is the second English port. Its docks extend for miles, and besides being our chief cotton port it is the great emporium of American and Irish commerce.

Bristol (182,524.) (*Avon*) ranks next as a port, its trade being with the South of Ireland, West Indies, &c. It has glass, brass, iron, and lead works.

Hull (121,598.) (*Humber*) is the great emporium of trade with the Netherlands and the Baltic.

Newcastle (128,160.) (*Tyne*) ranks as our fifth port, whose importance has risen with the neighbouring coal trade. It has many glass and other factories.

Portsmouth (113,000.) (*Solent*) is the principal seat of our navy and one of the three naval arsenals, the others being Chatham and Plymouth.

Yarmouth is the seat of the herring fishery, *Fleetwood* has a large timber trade, *Holyhead* has great trade with Ireland, *Dover* with France, and *Harwich* with Holland.

XIX.—EXPORTS.

We export all kinds of manufactured goods, particularly the following:—Cotton and woollen goods of every kind, iron and steel of every kind, hardware and cutlery, earthenware and glass; copper, coal, tin, and chemicals; beer, porter, and whiskey.

IMPORTS.

Imports.	Countries.
Raw Cotton ...	Egypt, India, United States, Queensland.
Wool	Germany, Spain, S. Africa, and Australia.
Silk	Italy, China, and India.
Flaxseed	The Netherlands and Russia
Jute and Hemp ...	India and Russia.
Tallow and Hides ...	Russia and S. America.
Timber and Wood	Canada, Norway, and the West Indies.
Olive Oil	Italy, Africa.
Petroleum	United States.
Gold	Australia, New Zealand, and California.
Copper	Australia, S. Africa, United States, and Spain.
Silver	Mexico, United States.
Tea	China, Assam, Paraguay.
Sugar	West Indies, Mauritius, and Brazil.
Coffee	West Indies, Arabia, Brazil, Guana.
Wheat	Prussia, Russia, Egypt, India and Canada.

XX.—IMPORTS.—*continued.*

Imports.	Countries.
Maize	United States.
Rice	India, United States.
Dried Fruits ...	West Indies, Spain, Turkey, Italy, Greece.
Green Fruits ...	Channel Isles, France, Spain, Portugal, America.
Butter and Cheese	Ireland, Holland, France.
Eggs and Vegetables	N. France, Ireland, and Belgium.
Fish	Holland, Canada, Ireland, and Scotland.
Cattle	Spain, Denmark, Austria.
Beef	United States and Canada.
Wines	Spain, Portugal, France, Germany, Sicily, S. Africa.

RAILWAYS.

XXI. **Railways.**—Only three of the Railways which enter London have incomes of above £100,000 a week, the *London and North Western* (1,613 miles), the main line going to Carlisle, passing Rugby Crewe—(from which a branch runs by Chester to Holyhead for Ireland, and another to Liverpool by Warrington, and a third branch by Manchester and Huddersfield to Leeds,—the *Great Western* (2,068 miles)—the main line going to Falmouth, through Reading, Swindon, Bath, Bristol, Exeter, and Plymouth—with a Branch by Oxford to Birmingham, a second by Shrewsbury and Chester to

Birkenhead, a third from Swindon, through Gloucester, Cardiff, and Swansea to Milford—the *Midland* (1,412), the main line to Barrow, passing Bedford, Leicester, Chesterfield, Sheffield and Leeds, with three branches—one connecting Derby with Nottingham and Lincoln—a second connecting it with Manchester and Liverpool, and a third running from Chesterfield, through Derby, Birmingham, Gloucester, and going on to Bristol.

The *North Eastern* (1,436 miles), has also receipts of over £100,000 a week, and runs from Leeds, through York, Durham, and Newcastle to Berwick. A branch connects North Allerton with Middlesborough, Leeds with Hull, and York City with Whitby and Scarborough.

XXII.—The following also run from London:—1. London, Chatham and Dover (153 miles), which passes through Canterbury. 2. South-Eastern, which goes to Hastings and Dover. 3. Brighton and South Coast, which also runs to Brighton, and from Brighton to Portsmouth. 4. The Great Eastern, which goes through Chelmsford,Colchester and Ipswich, to Yarmouth: the Lancashire and Yorkshire connects Liverpool with Manchester, Huddersfield and Leeds.

XXIII. **Watering-places.** — On the SOUTH are, Dover, Hastings, Brighton, Ventnor, Ryde, Dawlish, Teignmouth, Torquay, and Penzance. On the EAST—Tynemouth, Whitby. Scarborough, Filey, Margate, Ramsgate, and Deal. On the WEST—Ilfracombe, Weston-

Super-Mare, Tenby, Bangor, Llandudno, Rhyl, Douglas (in the Isle of Man), Southport, and Blackpool.

Mineral Springs, are at Harrogate, Askerne, and Ilkley in Yorkshire, Matlock and Buxton, in Derbyshire, Malvern, in Worcestershire, Cheltenham and Bath, in Gloucestershire, Tunbridge Wells, in Kent, and Leamington, in Warwickshire.

Universities.—Oxford, Cambridge, London, and Durham.

Great Schools.—Winchester, Cheltenham, Marlborough, Eton, Harrow, Stonyhurst, Rugby, Liverpool Institution, City of London College, King's College (London), Brighton College, Shrewsbury, Wellington College, &c.

SCOTLAND.

I.—Scotland or North Britain is separated from Ireland by the North Channel, and from England by the Cheviot Hills, and the Solway Frith. Its length from Cape Wrath to the Mull of Galloway is 270 miles, and its breadth varies from 180 to 30 miles. The area including Islands is 31,000 square miles, and the population 3,360,000. It is divided into 33 counties, 10 northern, 10 central and 13 southern.

COUNTIES.

I.—Ten Northern Counties.

County.	County Town.	Situation.
1. Orkney and Shetland	Kirkwall	on Mainland,
2. Caithness . .	Wick . . .	Wick River
3. Sutherland . .	Dornock .	Dornock Frith
4. Ross . .	Dingwall .	Cromarty Frith
5. Cromarty . .	Cromarty .	Do.
6. Nairn . .	Nairn . .	Nairn River
7. Elgin . . .	Elgin . .	Lossie ,,
8. Banff . . .	Banff . .	Deveron ,,
9. Invernes . .	Inverness . .	Ness ,,
10. Aberdeen . .	Aberdeen .	Dee ,,

II.—Ten Central Counties.

County.	County Town.	Situation.
1. Kincardine . .	Stonehaven .	Carron .
2. Forfar . . .	Forfar . .	L. Forfar .
3. Perth . . .	Perth . .	Tay . .
4. Dumbarton . .	Dumbarton .	Clyde . .
5. Stirling . .	Stirling .	Forth . .
6. Clackmannan .	Clackmannan	Black Down.
7. Kinross . .	Kinross .	L. Leven .
8. Fife . . .	Cupar . .	Eden .
9. Argyle . . .	Inverary .	L. Fyne .
10. Bute . . .	Rothsay. .	Fr. of Clyde

III.—Thirteen Southern Counties.

County.	County Town.	Situation.
1. Lanark . .	Lanark .	Clyde .
2. Renfrew . .	Renfrew .	Clyde .
3. Ayr . . .	Ayr . .	Ayr . .
4. Wigton . .	Wigton. .	Wigtown B.
5. Kirkcudbright .	Kirkcud-bt. .	Dee . .
6. Dumfries . .	Dumfries .	Nith . .
7. Peebles . .	Peebles. .	Tweed . .
8. Selkirk . .	Selkirk. .	Ettrick .
9. Roxburgh . .	Jedburgh .	Jed . .
10. Berwick . .	Greenlaw .	Black Adder
11. Haddington . .	Haddington .	Tyne . .
12. Edinburgh . .	Edinburgh .	Leith . .
13. Linlithgow . .	Linlithgow .	Avon . .

IV.—Islands.—There are three large groups—the ORKNEYS, which include twenty-nine inhabited islands with above forty smaller ones, the largest are Mainland or Pomona, Hoy, and Sanda. The SHETLAND which consist of thirty inhabited islands, together with above sixty islets and rocks; the largest are Mainland, Yell, and Unst: the HEBRIDES are distinguished as the INNER and OUTER, the former including Skye, Mull, Islay, Jura, Rum, &c., and the latter, Barra, North and South Uist (*wist*), Harris, &c. Of the Hebrides, which number two hundred, about seventy are inhabited. We have also Arran and Bute in the Frith of Clyde, Fair Isle, north of the Orkneys, and Bass Rock in the Frith of Forth.

V. Capes.—On the east, Duncansby Head, Tarbet Ness, Kinnaird's Head, Buchan and Fife Ness, and St. Abb's Head. On the south, Burrow Head and Mull of Galloway. On the west, the Mull of Cantire, Point of Aire, Ardnamurchan and Sleat points, Butt of Lewis and Barra Head. On the north, Cape Wrath and Dunnet Head. In the Orkneys are Marwick and Hoy Heads.

Bays, Straits and Openings.—On the EAST, Sinclair Bay the Friths of Dornock, Murray, Beauly, Tay, and Forth. On the SOUTH, Solway Frith and the Bays Wigtown and Luce. On the WEST, Loch Ryan, Frith of Clyde, and Lochs Fyne and Linnhe, together with the Sounds, Jura, Mull, Kilbrennan, Sleat, and Islay, the Minch and Little Minch. On the NORTH, Pentland Frith, and Thurso Bay.

VI.—SCOTCH MOUNTAINS.

Mountain.	Position.	Summits.	Remarks.
Cheviot Hills, .	On the borders of England.	Cheviot Hill, 2,684 feet; Carter Fell.	Lie chiefly south of Roxburgh.
Lowther Hills, .	Lanarkshire	Lowther Hill, 2,520; Queensberry Hill.	Lie on the borders of Lanark, Peebles, Selkirk, and Dumfries.
Pentland Hills .	Edinburgh.	East Carnethy Hill, 1,800 feet.	Their direction is N.E. and S.W.
Lammermuir Hills,	Haddington.	Lammer Law, 1,700 feet.	Separate the Tweed basin from that of the N. Tyne.
Grampians, . .	Perthshire, Aberdeen, &c.	Ben Nevis, Mac Dhui, 4,295; Lawers, 3,945; Ledi, 2,863.	Run across the country from Kincardine to Argyle.
Northern Highlands,	Ross, Inverness, &c.	Ben Attow, 4,000; Ben Dearg, 3,550; Ben Wyvis, 3,422; Ben More, 3,230.	They run from Ardamurchan Point to Cape Wrath.

VII.—TABLE OF THE CHIEF RIVERS OF SCOTLAND.

River.	Source.	Counties.	Falls into
1. Clyde,	Lead Hills,	Lanarkshire	Frith of Clyde.
2. Tweed,	Lowther Hills,	Peebles, Selkirk, Berwick.	North Sea.
3. Forth,	Ben Lomond,	Stirling, Fife, &c.	,,
4. Tay,	W. of Perth,	Perth,	Frith of Tay.
5. N. &. S. Esk,	Grampians,	Forfar,	North Sea.
6. Dee,	Ben MacDhui,	Aberdeen,	North Sea.
7. Don,	Ben Avon,	Aberdeen,	,,
8. Spey,	Inverness,	Inverness, Elgin,	Moray Frith.

VIII.—RIVERS OF SCOTLAND, TABLE 2.

River.	Basin.	Length.	Towns on its Banks.
1. Clyde, . .	1,580	98	Greenock, Port Glasgow, Glasgow, Lanark.
2. Tweed, . .	1,690	96	Berwick, Coldstream, Kelso, Peebles
3. Forth, . .	790	60	Queensferry, Boness, Grangemouth, Stirling, Aberfoyle.
4. Tay, . .	2,280	95	Perth, Dunkeld, Aberfeldy.
5. N. & S. Esk, .	280 & 250	47 & 53	Montrose, Brechin.
6. Dee, . .	530	90	Aberdeen, Ballater, Balmoral.
7. Don, . .	765	70	Inverury.
8. Spey, .	1,200	96	Garmouth, Fochabers, Kingussie

IX. **Lakes.**—Loch Lomond (the largest), Katrine (which supplies water to Glasgow), Tay, Rannock, Earn, Leven (two), Awe, Ness, Lochy, Shin, Doon, and Ken.

Mineral Springs are at Moffat, Peterhead, Strathpeffer, Bonnington, Innerleithen, Crieff, and Ballater.

Manufactures.—*Cotton*, at Glasgow, Paisley, and Kilmarnock; *Linen*, at Dundee, Arbroath, and Dunfermline; *Woollens*, at Hawick, Stirling, Bannockburn, Galashiels, and Kilmarnock; *Silk* at Paisley; *Iron* at Glasgow, *Airdrie*, and *Johnston*; *Agricultural Implements* at Stirling; *Paper* at Glasgow, Paisley, Edinburgh, and Dundee; *Leather* at Glasgow and Hawick.

X. **Scotch Industries.**—In the Lothians, a part of Berwick, and other Southern Counties agriculture is carried on systematically and successfully: in the counties between the Friths of Clyde and Forth agricultural, mining (which includes iron, coal, lead, and granite), manufacturing, and mercantile industries are all combined. In the Highlands sheep farming is extensively followed. Shipbuilding is actively pursued on the banks of the Clyde, at Aberdeen, Dundee, and Leith; and Whiskey is largely exported from many places, particularly Campbelltown, Inverary, &c.; the Book trade including printing, binding, and publishing is actively carried on in Edinburgh, and the retail trade in the other large towns.

XI. **Towns.**—*Edinburgh* (196,500), whose port is *Leith* (Coast) (44,277), two miles distant, is a handsome city divided into the old and the new town—the former consisting of narrow streets with houses ten or twelve stories high, the latter having fine wide streets, good shops, and handsome dwellings.

Glasgow (*Clyde*) (477,144) is a magnificent commercial and manufacturing town, combining with active local industries, commerce with all parts of the world.

Dundee (*Tay*) (119,000) is a splendid town engaged in linen, canvas, and jute trade, shipbuilding and extensive commerce.

Aberdeen (*Dee*) (88,000) has extensive shipbuilding, and ranks high as a seaport.

Greenock (*Clyde*) (57,138) is remarkable for sugar refineries, and serves as the outward port of Glasgow, and the S.W. of Scotland.

Paisley (48,000) is noted for silk factories; *Perth* (*Tay*) (26,000) for inland trade; *Kilmarnock* (23,000) has various manufactures; and *Arbroath* (*N. Sea*) (20,000) is chiefly engaged in the coarse linen trade. *Hawick* (*Teviot*) produces leather and woollen goods, and *Bathgate* paraffin oil. *Wick* has a fine herring fishery; *Port-Glasgow* imports timber; *Montrose* (15,000) is an active port; *Inverness* (15,000) is the capital of the Highlands.

XII. **Other Towns.**—*Haddington* and *Dalkeith* have splendid grain markets; while *Dumfries* and *Kelso* are noted for stock markets.

Falkirk has three great fairs. *Ardrossan* and *Troon* export coal; *Oban* is frequented by tourists; *Dunoon* and *Rothesay* are watering places frequented by sea-bathers and invalids; *Alloa* makes ale; *Kirkaldy* floor cloths; *Peterhead* and *Fraserburgh* take an active part in the whale and herring fisheries; *Ayr*, with considerable manufactures, is associated with the history of Sir William Wallace; *Bannockburn*, near Stirling, and *Culloden Moor*, near Inverness, are famous for battles in 1314 and 1746, the former a defeat of the English, the latter a defeat of the Highlanders. *Bulmoral* is the Scotch royal residence.

Exports.—Cattle, sheep, whiskey, cotton, linen, hardware, silk, tweeds, tartans, refined sugar, coal, canvas, confectionery, and fish.

Imports.—Raw cotton, silk, jute, hemp, wheat, books, flax, tea, coffee, raw sugar, timber, woollens, cutlery, vegetables, &c.

University Towns.—Edinburgh, Glasgow, St. Andrews, and Aberdeen.

Railways.—(1) The *Caledonian* (743 miles) enters from Carlisle and proceeds N. to Glasgow and Edinburgh, and goes through Perth and Montrose to Aberdeen; (2) the *North British* (870) runs N. from Berwick to Edinburgh, and also to Aberdeen; (3) The *Highland* (246) con-connects Perth and Inverness; (4) The *Great North of Scotland* (270 miles) connects Aberdeen with Fraserburgh, Banff, and Elgin.

IRELAND.

I. IRELAND is bounded on the N. W. and S. by the Atlantic Ocean, on the E. by the Irish Sea and St. George's Channel.

Its length from Fair Head in Antrim to Mizen Head in Cork is 300 miles; and its breadth from Howth Head in Dublin to Slyne Head in Galway is 170 miles.

Ireland is divided into Four Provinces—Ulster in the N., Leinster in the E., Munster in the S., and Connaught in the W. These are subdivided into 32 counties.

Ulster, Nine Counties.

County.	County Town.	Situation.
1. **Antrim** . .	**Belfast** .	**Lagan.**
2. **Down** . .	**Downpatrick**	**Quoyle**
3. **Armagh** . .	**Armagh City**	**Callan.**
4. **Monaghan** .	**Monaghan** .	**Ulster Canal.**
5. **Cavan** . .	**Cavan** .	—
6. **Fermanagh** .	**Enniskillen** .	**Erne.**
7. **Donegal** . .	**Lifford** .	**Foyle.**
8. **Londonderry** .	**Londonderry.**	**Foyle.**
9. **Tyrone** . .	**Omagh** .	**Strule.**

II.—Leinster, Twelve Counties.

County.	County Town.	Situation.
1. Louth	Dundalk	Dundalk Bay.
2. Meath	Trim	Boyne.
3. Dublin	Dublin	Liffey.
4. Wicklow	Wicklow	Vartry.
5. Wexford	Wexford	Slaney.
6. Carlow	Carlow	Barrow.
7. Kilkenny	Kilkenny	Nore.
8 Kildare	Naas	Near Liffey.
9. Queen's County	Maryborough	Triogue.
10. King's County	Tullamore	Grand Canal.
11. Westmeath	Mullingar	Royal Canal.
12. Longford	Longford	Camlin.

III.—Munster, Six Counties.

1. Waterford	Waterford	Suir.
2. Cork	Cork	Lee.
3. Kerry	Tralee	Tralee Bay.
4. Limerick	Limerick	Shannon.
5. Clare	Ennis	Fergus.
6. Tipperary	Clonmel	Suir.

IV.—Connaught, Five Counties.

1. Galway	Galway	Corrib.
2. Mayo	Castlebar	—
3. Sligo	Sligo	Garrogue.
4. Leitrim	Carrick	Shannon.
5. Roscommon	Roscommon	Haid.

V. Islands.—On the W. Valentia, Arran (North and South), Clare, Achill, and Tory; on the N. Rathlin; on the E. Copeland, Lambay, and Ireland's Eye; on the S. Great Island, Cape Clear, and Bear Island.

Capes.—On the N. Bloody Foreland Point, Malin, Bengore, and Fair Heads; on the E. Clogher, Howth and Wicklow Heads; Cahore and Greenore Points; on the S. Carnsore Point, Hook Head, Old Head of Kinsale, Cape Clear, Mizen and Sheep Heads; on the W. Sybil Head, Kerry Head, Loop Head, Hags Head, Slyne Head, Achill Head, Erris Head, and Rossan Point.

VI. Bays and Openings.—On the N. Loughs Swilly and Foyle; on the E. Belfast and Strangford Loughs, Dundrum Bay, Carlingford Lough, Dundalk, Drogheda, and Dublin Bays, Wexford Haven; on the S. Waterford, Cork, and Kinsale Harbours, Dungarvan, Ballycotton, and Bantry Bays; on the W. Kenmare, Dingle, and Tralee Bays, Mouth of the Shannon, Liscanor, Galway, Clew, Blacksod, Killala, Sligo, and Donegal Bays, Broad Haven, and Killery Harbour.

Lakes.—Loughs Neagh, Erne, and Oughter in Ulster; Loughs Allen, Ree, and Derg on the Shannon; Loughs Conn, Mask, and Corrib in Connaught; and the Lakes of Killarney, noted for exquisite scenery, in Kerry. There are hundreds of smaller lakes teeming with abundance of fine fish.

VI.—IRISH RIVERS.

River.	Source.	Counties.	Flows into
1. Shannon	Cuilcagh Mountains	Separates Leinster from Connaught—touches 10 counties	Atlantic.
2. Lee	Caha Mountains	Cork	Cork Harbour.
3. Blackwater	Kerry Mountains	Cork	Youghal Harbour.
4. Suir	Slieve Bloom Mts.	Tipperary—separates Waterford from Kilkenny and Wexford	Waterford Harbour.
5. Barrow	Slieve Bloom Mts.	Touches 7 counties	,,
6. Slaney	Wicklow Mountains.	Wicklow, Carlow, Wexford.	Wexford Haven.
7. Liffey.	Wicklow Mountains	Wicklow, Kildare, Dublin.	Dublin Bay.
8. Boyne	Bog of Allen	Kildare, Meath	Irish Sea.
9. Bann	Mourne Mountains	Down, Antrim, Londonderry.	Atlantic.
10. Foyle	Near Strabane	Tyrone, Donegal, Londonderry.	Lough Foyle.

VII.—IRISH RIVERS—TABLE 2.

River.	Basin.	Length.	Towns on Banks.
1. Shannon .	4,600	220	Limerick, Athlone, Carrick.
2. Lee . .	500	40	Queenstown, Cork, Macroom.
3. Blackwater .	1,330	90	Youghal, Lismore, Fermoy, Mallow.
4. Suir . .	750	100	Waterford. Clonmel, Thurles.
5. Barrow . .	3,750	120	New Ross, Carlow, Athy, Portarlington.
6. Slaney . .	734	70	Wexford, Enniscorthy, Tullow.
7. Liffey . .	650	50	Dublin, Lucan, Newbridge.
8. Boyne . .	1,050	65	Drogheda, Navan, Trim.
9. Bann . .	2,270	80	Coleraine, Portadown, Banbridge.
10. Foyle . .	1,100		Londonderry, Strabane.

VIII.—IRISH MOUNTAINS.

Mountain.	Position.	Summits.	Remarks.
1. Macgillycuddy's Reeks	Lie in S.W. of Kerry.	Carn Tual 3,404; Hungry Hill 2,249; Mangerton 2,550.	These are the highest mountains in Ireland. Mangerton and Hungry Hill are separate mountains.
2. Tipperary . Mountains.	Tipperary, Queen's, &c.	Keeper Hill 2,278, Arderin 1,733.	They are named Silver Mines, Devil's Bit, Slieve Bloom.
3. Wicklow . Mountains.	Cover much of the County.	Lugnaquilla 3,039, Kippure 2,472, Sugar Loaf 1,620	These mountains are remarkable for exquisite scenery.
4. Mourne . Mountains.	Down . .	SlieveDonard 2,796, Eagle Mount, 2,085.	They lie between the town of Newry and Dundrum Bay.
5. Donegal . . Mountains.	Cover much of the County.	Slieve Snaght 2,020, Errigal 2,462, Blue Stack 2,283	They mostly lie in the west of the County.
6. Mayo . . Mountains.	West of the County	CroaghPatrick 2,530 Muilrea 2,685, Nephin 2,580.	There are also the Twelve Pins (2,400) in the W. of Galway, & Croghan 2,250

Note.—It is remarkable the Irish mountains are almost all round the coast. There are also the Antrim Mountains, Blackstairs in Wexford, the Ox Mountains in Sligo, and the Carntogher Mountains N. of Tyrone, with several less important.

IX. Irish Industries.—The prevailing industry in Ireland consists of agriculture, the crops being potatoes, wheat, oats, flax, barley, and rye, with the usual green crops. Many thousands of beeves are annually exported to England, together with all kinds of farm produce, pigs, sheep, and poultry. **Mining** is carried on to a very moderate extent, coal, lead, and copper being found in so limited quantities as hardly to defray the expense of bringing them to the surface. Rock salt is found in Antrim. The **Manufactures** consist of tabinets, lace, glass, porter, whiskey, and coarse woollens. **Linen**, however, is very extensively made at Belfast and towns in its neighbourhood. The **Fisheries** are said to be improving, owing to a better management; and salmon during the season are forwarded to London with commendable expedition. The herring fishery of Howth is unsurpassed by that of any other town in the world. Kinsale is the seat of the Irish mackerel fishery, a source of considerable wealth in successful seasons.

X. Towns.—*Dublin* (250,000) (*Liffey*), a beautiful city in many respects, the seat of the Lord Lieutenant, has several breweries and distilleries, and considerable trade as a port. Its park, squares, and public buildings are unique. *Belfast* (180,000) (*Lagan*) is noted for linen manufacture, shipbuilding, commerce, and provision curing. *Cork* (80,000) (*Lee*) has large shipping trade, particularly exports of butter and provisions. Its butter market is the very best. *Limerick* (40,000) (*Shannon*) has bacon curing, but as a port it is declining. *Waterford* (25,000) (*Suir*) ships provisions largely to England. *Londonderry* (25,000) (*Foyle*) has some coasting trade, shirtmaking, &c., and is an industrious place. *Galway* (17,000) (*Corrib*) is declining. *Drogheda* (14,000) (*Boyne*) exports grain, live stock, and provisions largely.

XI. The other ports are Sligo, Dundalk, Newry (which imports timber), Kingstown, which is the packet station for England, Wexford, Bantry, Westport, and Ballina. Among the inland cities Kilkenny and Armagh are agricultural centres, and the towns of Mullingar, Ballinasloe, Fermoy, Enniskillen, Navan, Ballymena, and Dungannon have very good markets of live stock.

The following industries are carried on at the towns named :—

Linen.—Belfast, Lisburn, Portadown, Antrim, Carrickfergus, Ballymena.
Cotton.—Belfast, Drogheda, Portlaw.
Shipbuilding.—Belfast, Cork, Londonderry.
Pottery.—Belleek, in Fermanagh.
Salmon Fishery.—Coleraine, Ballyshannon, Ballina, Westport, Galway, Glin, Limerick, Bandon, Wexford, Drogheda.
Provision Curing.—Dublin, Limerick, Belfast.
Hosiery.—Balbriggan, in the County Dublin.
Paper.—Dublin, Belfast, and Cork.

XII. **Exports**—Cattle, pigs, sheep, corn, provisions, eggs, whiskey, porter, fish, butter, vegetables, linen, lace, &c.

Imports.—Manufactured goods, brandy, wines, books, leather, cheese, hops, silks, flannels, furniture, woollens, leather, chinaware, coal, glass, tea, coffee, sugar, &c.

Railways.—There are four great Railway Systems:—(1) The Great Northern of Ireland (388 miles) which connects Dublin with Belfast, Coleraine, and Londonderry; (2) the Midland Great Western (348 miles), which runs from Dublin to Galway and Sligo; the Great Southern and Western (466 miles), which connects Dublin with Cork, Limerick, and Tralee; (4) the Dublin and Wicklow (122 miles), which goes to Kingstown, Bray, and Wexford.

XIII. **Government of the United Kingdom.**—The Government of England has been monarchical since the remotest period that history can penetrate. The supreme Government consists of the King, Lords, and Commons; and no law can be enacted without the concurrence of the three, according to well-defined principles of our constitution. In the House of Commons England and Wales have 488 members; Scotland is represented by 60 and Ireland by 103 members; and in the House of Lords Ireland is represented by 28 peers, elected for life from all the Irish peers, and Scotland by 16 peers. All the English peers are hereditary members of the House of Lords.

The real ruler of the British Empire is the Prime Minister of the day, who must be an eminent statesman, commanding a majority of the House of Commons. He is assisted by 14 others, usually prominent members of both Houses of Parliament, who preside over the various departments of state. When from any cause whatever the Premier loses the confidence of the country, a circumstance usually tested by an adverse vote of the House of Commons, his party go out of office, and a successor from their political opponents is entrusted with the affairs of the State. The private meeting of the members of the Government is called a Cabinet Council, which dates almost from the Revolution. Our army is small; but our navy is by far the most powerful in the world.

"As to the system of representative government under which we live, its superiority is only fully apparent when contrasted with countries governed on autocratic principles. The machinery of our government is self-regulative; the pressure of public opinion through the legitimate channels, a free press, and freedom of speech at public meetings, precluding the risk of political plots being hatched on an extensive scale in this country."—*Competitive Geography.*

BRITISH COLONIES.

British Colonial Empire.

I.—Our Colonies, as regards form of government, may be divided into three classes—those having responsible governments, those having representative institutions, but not responsible governments, and those called "Crown Colonies," in which the authority of the Crown predominates. In the first class the countries are almost independent, the Crown appointing the governor, and having a veto upon their legislation lest it might clash with imperial interests. These have responsible ministers, who exercise patronage, and are subject to change, just as in the imperial government. In the second class the Crown controls all appointments, and the officers of administration are under the home government. The principal Crown Colonies are Ceylon, Hong Kong, Guiana, Jamaica, Mauritius, Trinidad, the Straits Settlements, and the districts on the West coast of Africa. Our right to the Colonies was acquired by occupancy, conquest, cession, or purchase. An appeal lies from the Colonial legal tribunals to the Judicial Committee of the Privy Council in London.

British Possessions in Europe.

II.—**Heligoland**, **a small island in the German ocean, taken from the Danes 1807 ; popu-**

lation 2,000, who live by acting as pilots and engage in fishing. It is now of little importance.

Gibraltar, (25,000) consists of three streets running parallel to each other, the longest extending a mile, where every day may be seen a mixture of the inhabitants of most European nations. There are no fresh water springs, and the only supply is the rainfall; hence, in the hot season, from July to November, epidemics have often preyed on the inhabitants. In 1462 it was taken from the Moors. In 1704 it was taken by Sir G. Rooke, and in 1779 it was gallantly defended against a combined attack of France and Spain, by General Elliot, created Lord Heathfield. The blockade lasted until 1782. About 1,000 guns are mounted on the fortifications, one of which is fired every evening, when the draw-bridge from the mainland is hauled over. It is a free port, and commands the entrance to the Mediterranean.

We possess the **Maltese Group,** lying fifty miles S. of Sicily, and consisting of *Malta* (142,000), *Gozo* (16,000), and *Comino.* They were taken from the French in 1800. Cotton, honey, and fruits are the productions.

Valetta (45,000), the capital, is strongly fortified. This is the chief station of the Mediterranean fleet, and principal depôt for English merchandise in the Mediterranean. It exports raisins.

India or Hindoostan.

III. **The Surface** mainly consists of the fertile valley of the Ganges, and a part of the less fertile Indus valley, the Deccan or central table-land with its four mountain buttresses, the Indian desert, in the N.W., and Mulwa plateau. The climate is mild in the N. and on the table-lands, but very hot in the lower regions and near the coast. There are the wet and the dry seasons. The length of India is 2,000 miles, and breadth 1500, population 238 millions, area 1½ million of square miles.

Boundaries—N. Himalaya Mountains and Kashgaria; E., Bay of Bengal and Burmah; S., Indian Ocean; W., Afghanistan, Beloochistan, and Arabian Sea.

Islands—Ceylon, Maldive, Laccadive, and Nicobar Isles.

Bays and Openings—Gulfs of Manaar, Cambay, and Cutch.

Mountains—The Himalayas, the highest mountains in the world, run along the N.; Suliman Mountains in the N.W.; Aravulli Mountains in the W.; Sautpoora Mountains, Vindhya Mountains, E. Ghauts, W. Ghauts, and the Neilgherries.

Rivers—On the E. the Ganges, Mahanuddy, Godavery, Kistna and Cauvery; on the W. Indus, Nerbudda, and Taptee.

IV.—INDIAN RIVERS.

Rivers.	Length.	Towns,
1. Ganges . .	1,500	Calcutta, Patna, Benares, Allahabad, Cawnpore.
2. Mahanuddy .	520	Juggurnaut, Cuttack.
3. Godavery .	895	Aurungabad, (near)
4. Kistna .	700	Masulipatam.
5. Cauvery .	500	Tanjore, Trichinopoly, Seringapatam.
6. Indus .	1,700	Kurrachee, Hyderabad, Attock, Lee.
7. Nerbudda .	800	Jubbulpore.
8. Taptee .	440	Surat.

Note.—The Ganges Tributaries are, Gumti, Gogra, and Jumna. The Chumbul is a tributary of the Jumna almost as large as itself. The Cabool and the five rivers of the Punjab (Sutlej, Jhelum, Beas, Ravee, and Chenab) are feeders of the Indus.

British Possessions in Asia.

Our Indian Empire.

V.—Our great Indian Empire has a kind of dual government, a Secretary of State assisted by a council of 15 members sitting in London, and the Governor-General, who, with a council of five members, presides at Calcutta. The popular division consists of the presidencies of Bengal, Madras, and Bombay. But for administrative purposes British India is divided into 12 provinces, which are subdivided into 53 divisions or commissionerships, consisting of 231 "Revenue and Judicial" districts. We follow the old division into three presidencies. About three-fifths of the whole country is directly under our rule.

Presidency of Bengal.

Chief Divisions.	Towns.
The Lower Provinces,	Calcutta, Serampore, Patna
The North-west Provinces,	Agra, Cawnpore.
Oude,	Lucknow, Oude.
The Punjab,	Lahore, Mooltan, Delhi.
Berar, or Nagpoor, &c.,	Nagpoor, Chanda.

VI.—BENGAL is a flat district, well watered by rivers, which swell and overflow in the rainy season, leaving a rich alluvial deposit on the country near. Silk, tea, rice, opium, and cotton are largely cultivated.

Calcutta (600,000) (*Hooghly*), the capital of British India, is about 100 *m.* from the sea. It is divided into two parts : the one inhabited by Europeans and native merchants, is beautifully laid out, with wide streets and handsome public edifices ; the other, " Black Town," is crowded with inhabitants, but it is very filthy. The jute and cotton factories number nearly twenty; and its educational establishments are liberally patronized.

Plassy, to the N., 70 *m.* distant, is memorable for the victory of Clive, 1757, which overthrew Surajah Dowlah, and laid the foundation of the Indian Empire. *Moorshedabad* (*Ganges*), a thriving coral town, has silk, carpet, and embroidery-making. *Dacca, Patna* (*Ganges*), 370 *m.* from Calcutta, and *Cuttack* (*Mahanuddy*) are good towns.

The **N. W. Provinces** include the upper and middle Ganges.

Agra (*Jumna*) stands in the midst of a sandy plain. *Benares* (*Ganges*) is a holy city of the Hindoos. *Allahabad* is held sacred by the Brahmins, who flock to it in crowds as pilgrims. *Cawnpore* (*Ganges*) is one of the most important central cities. Here were perpetrated (in 1857) the brutal massacres of Nanah Sahib, when 200 British women and children suffered the most cruel butcheries.

Hurdwar (*Ganges*), near the base of the mountains ; *Feruckabad*, a walled town ; *Mirzapore*, a well-built town ; *Meerut*, where the mutiny

cauliflower	ex
centesimal	f
chichanery	f
chiropodist	f
coincidence	tr
commiserate	g

VIII.—Bombay Presidency.

Divisions.	Towns.
North and South Concan,	Bombay, Tannah.
Poonah, Ahmednuggur,	Poonah, Ahmednuggur, Sattara.
Khandesh and Goojerat.	Surat, Baroche, Ahmedabad.
Scinde, or Sind,	Hyderabad, Tattah, Kurrachee.

BOMBAY, the smallest presidency, is on the western side, with a coast-line extending from Canara, in the S., to the mouths of the Indus, with an inward reach varying from 200 to 300 miles. This presidency includes the best cotton fields of India, with an increasing exportation. The exports consist of cotton, opium, coffee, pepper, ivory, and gums. The area is about the same as that of the United Kingdom, and the population about 12,000,000.

Bombay (650,000)—from two Portuguese words *(bom-bahia)* meaning good harbour—stands on a small island of the same name, which is about nine miles long, and in a rather picturesque position, with the mountain range of the Ghauts in the distance behind. During the last few years the exports of cotton have greatly increased. Its commerce is very extensive.

IX.—POONAH and SATTARA lie inland, and enjoy a more temperate climate than if on the coast.

first broke out, 10th May, 1857; and *Simla*, the favourite summer residence of the governors-general, are in this province.

VII.—**Oude,** or **Oudh,** annexed by Lord Dalhousie, 1853, is situated between the Ganges and Nepaul. Its area is about 25,000 square miles, and its population above 11,000,000.

Lucknow (*Gumti*) is surrounded by a well-wooded country. In the mutiny of 1857, the garrison defended the residency under Sir H. Lawrence and Sir H. Havelock, for 87 days, against 60,000 native troops, until relieved by Sir Colin Campbell.

The **Punjab** in the N.W. is so named from the "five rivers" which water it. Wheat, rice, barley, maize, indigo, cotton, tobacco, and opium are grown and exported.

Delhi (170,000) (*Jumna*), long the capital of the Mahometan Empire in India, stands about 270 *m.* from Cawnpore. In 1857 the mutineers seized the city, in which they were then besieged; it was retaken by the British, 20th September following. Here on 1st January 1877, Queen Victoria was proclaimed Empress of India, with great pomp. *Lahore* (*Ravee*) is a large and important city. *Goojerat* and *Chillienwallah* are battle fields, the former gained by Lord Gough, 1849. *Mooltan* (*Chenab*) was taken, 1849. *Peshawur* (*Cabool*), is in a strong frontier military position.

The Central Provinces are—*Nagpoor*, almost wholly within the Deccan, *Sagar*, *Nerbudda*, and *Ajmeer*.

VIII.—Bombay Presidency.

Divisions.	Towns.
North and South Concan,	Bombay, Tannah.
Poonah, Ahmednuggur,	Poonah, Ahmednuggur, Sattara.
Khandesh and Goojerat,	Surat, Baroche, Ahmedabad.
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Poonah, formerly the capital of the Mahratta empire, stands in a plain, about 100 *m.* by rail from Bombay. *Admednuggur* was taken by Wellesley, 1803. *Sattara,* about 115 *m.* S. from Bombay, is an important military station.

KHANDESH and GOOJERAT produce much of the Indian cotton.

Surat (Taptee) is declining. Here the East Indian Company established their first factory.

SCINDE embraces the lower part of the Indus valley, where rich crops of rice, barley, sugar and indigo are raised.

Hyderabad, its capital, stands on an eminence, and has manufactures of arms. *Kurrachee* (20,000), the principal port and telegraph station, is rapidly rising into importance.

X.—Madras Presidency.

Divisions.	Towns.
The Carnatic,*	Madras, Arcot, Tanjore.
N. Circars,	Ganjam, Masulipatam, Coringa.
S. Canara and Malabar,	Mangalore, Cannanore, Calicut.
Mysore,	Mysore, Bangalore, Seringapatam.
Coimbatore,	Coimbatore.
Coorg,	Mercara.

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* The Carnatic, a familiar, though not a geographical term, extends from Cape Comorin as far as the mouth of the Kistna. The *Malabar coast* extends along the W. shore from Cape Comorin as far N. as Mangalore; and the *Coromandel coast* runs on the E. and the term is applied to the sea only.

MADRAS embraces the whole south of the Indian peninsula, including the E. and W. coasts, with the exception of the French possessions.

Madras (400,000) (*B. of Bengal*) is a handsome city with a very bad harbour, merely a roadstead two miles distant, which only admits small flat-bottomed boats or rafts to enter the town. It has trade in stuffs, cotton, and indigo.

Arcot was the place where Lord Clive, in 1751, gained his first military laurels. *Vellore* was the scene of a massacre of the British officers by the native troops, 1806, in a mutiny. *Tanjore* (*Cauvery*) a chief city of the Hindoos; *Trichonopoly* (*Cauvery*) a strong town with manufactures of cutlery, jewellery, and cheroots, are noteworthy places.

The N. CIRCARS district extends from the Chilka Lake along the Carnatic to the mouth of the Kistna.

Ganjam is now almost in ruins. *Masulipatam*, near the mouth of the *Kistna*, has manufactures of chintzes and muslins.

MALABAR and S. CANARA are similarly situated on the W. coast. The district produces cocoa nuts, rice, spices, pepper, and ginger.

Mangalore is one of the principal ports.

Calicut (20,000) is remarkable as the first place in India visited by Vasco de Gama, 1498. It gave its name to article *calico*.

COIMBATORE lies between the Malabar and Carnatic coasts, and COORG on the N.W., with beautiful well-cultivated valleys.

Coimbatore, a large town, and *Mercara*, the capital of Coorg, are noteworthy.

MYSORE is an inland district, almost as large as Scotland. The climate is healthy and pleasant, and the productions are cinnamon, pepper, coffee, silk, cotton, and sago. Population about 5,000,000.

Mysore (55,000) contains the British Residency. *Seringapatam* (12,000) is on an island in the Cauvery. In 1799 it was taken by the British, and Tippoo Sahib killed. *Bangalore* is the largest town on the coast.

XI.—CEYLON is a Crown colony separated from India by Palk's Strait and the Gulf of Manaar. The most remarkable mountain is called Adam's Peak (7,420 feet). The soil is rich and vegetation luxuriant, producing coffee, sugar-cane, cinnamon, rice, pepper, also teak and other valuable woods. This island abounds with precious stones, including sapphires, rubies, and topazes. There are also mines of iron and manganese. Ceylon is chiefly famous for its elephants, which are esteemed for size and sagacity. The population (2½ millions) contains only 20,000 Europeans.

Colombo (80,000), the capital was taken from the Dutch, 1796. *Galle*, or *Point de Galle* has an excellent harbour, and has become an important steampacket port of call. *Trincomalee* is fortified. Its harbour was called by Nelson "the finest in the world." *Candy* or *Kandy* (8,000) is near the centre of the island. *Jaffna* (7,000) is a place of commercial importance

The ANDAMAN ISLANDS in the Bay of Bengal, yield valuable timber. They are inhabited by naked savages, who fight with spears and arrows. At *Port Blair*, the convict establishment since the Indian mutiny, Lord Mayo, the Viceroy, was stabbed. The LACCADIVE ISLES are subject to Madras.

XII. *Inhabitants.*—The *Mahometans* number twenty millions, who "have seen their sect and race dispossessed of ill-gotten supremacy." The Indian Mussulmans, now 41 millions, look upon the Indian education system, British rule, and modern advancement, with sullen resentment.

The *Hindoos* consist of several sects, all idolaters. They accept the education system, learn the English language, and fit themselves as far as possible for public employment. They are intelligent and frugal, but subtle and treacherous; and number about 127 millions.

The *Sikhs*, who dwell near the Sutlej, number about two millions. The *Buddhists* are widely diffused, and number five millions. All religions are equal in the eye of the government.

Education.—There is in the capital of each Presidency a University, a director of public instruction, and a staff of school inspectors. Colleges are established in most large towns, and an engineering school at Poonah.

Manufactures are chiefly coarse linen, silk, ropes, and cotton, which has 40 mills in Bombay, 4 in Calcutta, 2 at Cawnpore, and 1 at Nagpore, all of recent introduction.

Exports: tea, jute, cotton, opium, silks, wheat, rice, saltpetre. camphor, tobacco, hemp, &c.

Commerce—The foreign trade amounted to 100 millions in the financial years ending 1874-5.

ANIMALS consist of elephant, tiger, yak, buffalo, lion, leopard, boar, wild ass, jackal, scorpions, snakes, eagles, hawks, &c., &c.

XIII.—BRITISH BURMAH & STRAITS SETTLEMENTS.

British Burmah, population 2,750,000, consists of ASSAM, bordering on Thibet and traversed by the Brahmapootra — ceded by Burmah, 1826. It has extensive tea culture. The towns are small. ARACAN, on the shore of the Bay of Bengal, is swampy with a broken coast on the N., fringed with islands. PEGU, as large as Ireland, includes the lower course of the Irrawaddy; retained after the Burmese war, 1852. TENASSERIM is nearly 500 *m.* long, and about 50 broad, extending from Pegu to Malacca. The climate is not extreme; soil fertile; minerals abundant. The STRAITS SETTLEMENTS are under a governor, and consist of Penang, or Prince of Wales's Island, Singapore, Province Wellesley, and Malacca.

The Capital of Aracan is Akyab, the port of the province. Rangoon (100,000) (*Irrawaddy*) has considerable trade. It is the head quarters of British influence. *Prome* (30,000), higher up the river, is the largest town in British Burmah. *Moulmein* (54,000) (*Saluen*), is the most commercial town in the province. Gowhatty is the chief seat of trade in Assam. Rassein (20,000) (*Irrawaddy*) is a river port.

In the Straits Settlements Georgetown, the capital (40,000), has extensive trade. Pepper is largely exported from Penang.

Malacca (75,000) has the British garrison; Singapore (60,000) is the steampacket station. Though it is only eighty miles from the equator, the climate is pretty temperate.

XIV.—LABUAN, an island, produces much coal. Its population 4,000; trade is improving.

HONG KONG, a rather barren island, is a station for the protection of our commerce; population 125,000. The capital is Victoria.

ADEN, an important fortress in Arabia near the entrance to the Red Sea, taken by Britain 1839, serves as a marine station.

PERIM, an island in the S. entrance to the Red Sea, has a light-house—taken in 1859.

British Possessions in Africa.

XV.—Our "West African Settlements" are four:—Sierra Leone, Lagos, Gambia, and the Gold Coast. The climate is hot and unhealthy. *Sierra Leone,* called the "white man's grave," a peninsula 18 *m.* long and 12 broad, is inhabited chiefly by liberated slaves. *Freetown,* its capital, is at the mouth of the Rokelle, or Sierra Leone river. This colony has an area of 465 square miles, and a population of 40,000. *Exports:*

palm oil, cocoa nuts, hides, ginger, and gums. *Lagos* (20,000), an important town, was, with some territory around, ceded to Britain in 1861, and is a protectorate. It exports cotton, palm oil, lead, indigo, and cam-wood, brought from the interior. *Bathurst* (7,000) (*I. St. Mary*), is the head-quarters of the *Gambia settlement,* which has a population of 37,000, mostly negroes.

Gold Coast comprehends a number of fortresses destined for the suppression of slavery and the protection of trade. Gold, ivory, and gum are the chief exports. Out of a population of 400,000, only 320 are Europeans. We now have *Elmina,* separated from Cape Coast Castle by the *Sweet* river and other settlements.

South African British Colonies.

XVI.—CAPE COLONY extends from the Orange river around the Cape of Good Hope, and includes British Kaffraria, with a gross population (1876) reckoned at 1,340,000. There are two monntain ranges; the most inland, Nieuwveld mountains, being the higher, and the *Zwarte Berge* more south, with a rich maritime district along the coast. The coast line is 1,200 *m.* long. The actual cape is 36 *m.* long, culminating in *Table* mountain, behind Cape Town.

Saldanha Bay, on the W., is an excellent harbour; *Table B.* is hardly so good; but *Simon's B.* is very secure. N. of the mountains the surface slopes to the Orange river, desert-like upland intervening, called *Karroos.* The wild animals include the giraffe, zebra, lion, buffalo, &c.

Cape Town (29,000) (*Table Bay*) was founded by the Dutch in 1650. The streets are regularly built, crossing at right angles or running parallel to each other, and the town has a good trade.

Simon's Town contains an arsenal. *Stellenbosch* (5,000), has a Wesleyan establishment. *Graham's Town* (4,000) about 500 *m.* E. from Cape Town, is well built. *Port Elizabeth* (9,000) (*Algoa B.*) has good trade. About 25 *m.* inland is *Uiten hage* (5,000), the proposed new capital. *Constance* produces wine of high repute.

XVII. BRITISH KAFFRARIA lies further to the E. Agriculture and grazing are the chief industries. Wool, wine, brandy, gold, diamonds, copper, and hides are the principal exports.

GRIQUALAND WEST (area 13,000 sq. *m.*; population 90,000) is the Diamond Fields district, and lies 700 *m.* from Cape Town. *Griqua* is the capital. *Kimberley* is in the centre.

William's Town (*Buffalo river*) is the capital of British Kaffraria. *East London* is its port.

NATAL lies on the S.E. coast and is about the size of Ireland. It has a seaboard of 170 *m.*: population, 430,000. In 1843 it was made a British colony, which, in 1856, was made independent of the Cape. The slope is to the Indian Ocean.

XVIII.—*Productions*—wool, sugar, coffee, arrowroot, ginger, cereals, coal, copper, and iron; but the interior has not been fully explored. The *Drakenberg Mountains* rise to 10,000 feet.

Maritzburg (20,000), the capital, is 50 *miles* inland. *D'Urban*, its port, is increasing in importance. *Greytown* is in the interior. *Port Natal* (6,000) has a good harbour.

These islands serve as places of call for ships.

The following islands also belong to Britain:

Island.	Area.*	Population.	Remarks
St. Helena,	41	7,000	1,200 *miles* from continent.
Ascension,	35	500	Produces turtles. Georgetown is the capital.
Mauritius, [French is the Language used.]	700	320,000	Sugar is largely produced. Port Louis is the capital.
Chagos,	—	5,000	
Isles and Seychelles,	—	3,000	Belong to Mauritius.
Sacotra,	1000	5,000	Produces dates, aloes, &c.

* Area is in English square miles.

BRITISH AMERICA.

XIX.—British N. America* extends at least 3,000 *m.* from the Atlantic to the Pacific, and 1,600 *m.* from N. to S., with an area estimated at 3¼ millions of square *m*, and a seaboard of 4,300 *m*., of which only 1,200 are always open.

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* The government is vested in a Governor-General, aided by a Privy Council, also an Upper House of 72 members, appointed for life, and a House of Commons of 181 members, elected every five years by the people.

It lies N. of the parallel of 42° N. latitude, and between 54° and 141° W. longitude. The 49th parallel forms the boundary W. of the "Great Lakes," between British America and the United States. It is famous for magnificent rivers and lakes, splendid fisheries, rich and varied mineral wealth, fertile soil, and a healthy climate, with admirably developed canal and railway traffic.

The physical regions are—I. The tract beyond the Rocky Mountains. II. The basin drained into the Arctic Ocean. III. The basin of the St. Lawrence, which includes the "Great Lake" district. IV. Hudson Bay basin. V. The Arctic archipelago.

XX.—The DOMINION OF CANADA was formed in 1867. This country borders on the Great Lakes, which separate it from the United States on the S. W. From *L.* Ontario, the St. Lawrence is the boundary as far as Cornwall, where it runs directly E., touching *L.* Champlain on the extreme N., and going as far as the Connecticut river on the confines of Vermont and New Hampshire. A mountain ridge, running N.E., becomes the boundary as far as the river St. Francis, a tributary of the river St. John.

Dominion of Canada.

Provinces.	Area Sq. Miles.	Population.	Capitals.
Ontario . . .	121,260	3,672,116	Toronto (*L. Ontario*).
Quebec	210,000		Quebec (*St. Lawrence*).
New Brunswick . .	27,105	285,777	Fredericton (near *St. John*).
Nova Scotia . .	18,620	387,800	Halifax (*Coast*).
Rupert's Land . .	2,720,000	270,000	Fort York (*Nelson*).
British Columbia . .	213,000	85,000	Victoria (*G. of Georgia*).
Prince Edward Isle .	2,173	94,500	Charlottetown (*Hillsboro' R.*)
Manitoba . . .	14,350	12,000	Winnipeg.

XXI.—*Canada,* lying between the parallels of 45° and 50°, is divided into two rather unequal parts by the river Ottawa, and is about 1,300 *m.* long and from 100 to 350 broad. *Ontario* is almost a uniform plain, varied by gentle undulations; while *Quebec* abounds in mountains, forests, rivers, lakes, with a bold and rocky eastern shore. It has a long and rigorous winter, extending from the middle of October to the middle of April; but has great extremes of temperature. *Ontario,* with a climate less excessive and a shorter winter, produces abundant crops of wheat, oats, maize, barley, potatoes, tobacco, flax, and hemp. Quebec has also an important trade in furs, and the fisheries of the Dominion are the most valuable in the world. The isle of *Anticosti* belongs to the province of Quebec.

Ottawa (22,000) (*Ottawa*), is a well-built city, with beautiful public buildings, the most attractive being the New Parliament Houses. It is a great centre of the lumber trade, the timber coming down the river in great quantities, where it is forwarded to Quebec. It has a large number of saw mills. In winter the temperature is sometimes 26° below zero.

XXII.—*Montreal* (130,000), the largest and most commercial town in Canada, is on an island in the St. Lawrence, which is here spanned by the *Victoria* railway bridge, two miles long, consisting of 24 spans of 242 feet each, and one in the centre 330 feet. *Quebec* (65,000), a walled picturesque university town, on a promontory overlooking the St. Lawrence, called Cape Diamond, is a busy shipping port, particularly in timber. It was taken from the French, 1759, and the province, ceded 1763. *Toronto* (50,000) (*L. Ontario*), also a university city, is the great emporium of the Canadian grain trade. Its wharves extend three miles. Five lines of railway run from the town. *Kingston* (15,000) (*L. Ontario*), is, next to Quebec, the strongest town in Canada. *Hamilton* (23,000), (W. side of the lake), is of great commercial importance. *Belville* (10,000) has iron works. *Coburg* (9,000) (*L. Ontario*), has a good harbour. *Port Hope* (4,000), and *Oshawa* (2,500), are important stations on the Grand Trunk Railway. *Brantford* (9,000) is a town with transit trade. *London* (20,000) (*Thames*) has wide and regular streets, and handsome public buildings. *Chatham* (9,000) (*Thames*) is an important railway station. *Woodstock* (4,500) has good schools, hotels, &c. *Enniskillen* has valuable oil springs. *Niagara* (2,000) is a small town with great transit trade between Canada and New York; *Brockville* (4,000) (*St. Lawrence*,) and *Guelph* (5,000), inland, are railway stations. *Three Rivers* (7,000) (*St. Lawrence*), is midway between Quebec and Montreal. It has an extensive timber trade.

XXIII.—NEW BRUNSWICK lies on the gulf of St. Lawrence, between Canada on the N., Nova Scotia on the S., and the United States on the W. It is, in many places, densely covered with plantations of lofty pines; has important fisheries, abundance of coal: antimony, copper, and lead are found. Cereals and green crops are extensively cultivated. The climate is hardly so extreme as that of Canada.

Fredericton (7,000) (*St. John*), a central trade mart; *St. John's* (20,000) the commercial capital; and *Woodstock* (5,000) (*St. John*), with lumber trade, are the chief towns.

NOVA SCOTIA was first colonized by the French, from whom it was taken by the English in 1627, but restored in 1632. At the peace of Utrecht (1713) it was ceded to England. The forests are important. Coal and iron are plentiful. The climate is agreeable and healthy.

CAPE BRETON, separated from Nova Scotia by the Gut of Canso, is now politically united with it. *Halifax* (30,000), with one of the finest harbours in the world, is an important British naval station. *Louisburg*, the capital of Cape Breton, is almost in ruins. *Annapolis* has a good harbour, and *Liverpool* has active trade.

XXIV.—RUPERT'S LAND, lately incorporated with the Dominion of Canada, and formerly known as Hudson's Bay or N.W. Territory, consists of an immense tract W. of Canada, N. of the United States, and E. of British Columbia. It is chiefly a fur-producing district, inhabited by Indian tribes, the climate being too severe, unless in a few favoured valleys, for colonization.

York Fort is the chief station

MANITOBA, with an admirable climate, lies 50 miles N. of Minnesota, from which it receives the Red River. It is in the very centre of North America, 2,000 *m.* W. of Montreal, and 600 *m.* from Hudson Bay. The resources of this country consist of wheat, iron, gold, and coal, with a climate, though frost prevails for eight months in the year, suited for the production of cereals.

Winnipeg (5,000) has saw, plaining, and woollen mills; also many factories.

Pembina, near the United States border, is the chief town for trade with that country, though Fort Garry is better known.

BRITISH COLUMBIA lies beyond the Rocky mountains, and includes Vancouver, Queen Charlotte, and the other adjacent isles. This district extends from 49° to 55° N. latitude, and from 115° to 132° E. longtitude. It possesses admirable agricultural and pastoral capabilities, mineral wealth, and splendid timber forests.

XXV.—*Vancouver Island*, with an area of 16,000 square miles, is mostly mountain and barren rock, but densely wooded. It is separated from the mainland by Johnston *Strait*, the *G.* of Georgia and *St.* of Juan de Fuca. Gold, coal, and cereals are the chief productions. Fish and fowl are abundant. The climate has a close resemblance to that of the British Isles.

Victoria (6,000) (*G. of Georgia*), on Vancouver isle, a free port, is the capital of the colony. *New Westminster* (*Fraser*) is a small town, *Cariboo* is the chief seat of the gold-diggings. *Fort George* (*Fraser*) is the nearest town to these diggings. *Nanaimo* (*Vancouver I.*) ships coal.

PRINCE EDWARD ISLAND is a crest-shaped "green isle" of the gulf of St. Lawrence. *Charlotte Town* (7000) (*Hillsboro' R.*), in a picturesque site, is the only place of importance.

Newfoundland.

NEWFOUNDLAND is a large island on the N.E. side of the gulf of St. Lawrence, noted for "fogs, dogs, and fish." Wheat, oats, and turnips are produced. *Area*, 40,000 square miles; *population*, 161,500. The French have two fishing stations, *St. Pierre* and *Miquelon*, both near the S. coast.

St. John's (29,000) is a town of much commercial importance, with a good harbour, open at all seasons.

LABRADOR is a dependency of the above—climate severe, fisheries valuable, particularly that of seals, cod, and salmon.

Nain Fort, the capital, has an annual temperature of 7° below zero.

XXVI. Canadian Fisheries.—Besides the rich cod fishery of Newfoundland, the great lakes are stocked with trout, herring, pike, bass, and "white fish," with other varieties.

Mountains.—The *La Cloche* mountain or table-land, runs north from the E. end of Lake Huron. Some hills are in New Brunswick, and the Wotchish mountains are in the province of Quebec.

RIVERS.—The *St. Lawrence*, which drains the Great Lakes, has its most important tributaries the *Ottawa*, 800 miles long, the *St. Maurice*, which issues from *L.* Crossways, 250 *m.* and *Saguenay*, rising in *L.* St. John, with a course of 200 *m*. These three rivers water the best lumber district in the world. The *Richelieu* runs from *L.* Champlain.

The *Mackenzie* rises in Mount Brown (Rocky Mountains), and is first known as the *Athabasca*, and a more N. feeder, the *Peace* river; then again *Slave* river. It passes through *G.* Slave Lake, and under the name *Mackenzie*, enters the Arctic ocean.

The *Saskatchewan* is formed of several streams from the Rocky mountains in the S.W. of Rupert's land. It enters *L.* Winnipeg, and under the name *Nelson*, falls into Hudson Bay. Its course is about 1,600 *m*.

The *Assiniboine* runs E. through Manitoba, is joined by the *Red River* (only 70 *m.* of which is in British territory) from the United States, and enters Lake Winnipeg.

LAKES.—The lakes may be divided into three classes.—(*i*). those drained into the Arctic ocean—*Great Bear*, *Great Slave*, *Athabasca*, *Wollaston*, *Aylmer*, *Deer* lakes; (*ii.*) those drained into Hudson Bay—*Winnipeg*, *Winnipegosis Granville*, and *Manitoba;* (*iii.*) those drained by the St. Lawrence—*Lake of the Woods*, *Superior*, *Michigan*, *Huron*, *Erie*, and *Ontario*.

Education.—There is an admirable educational system in Canada. The schools which are numerous, are chiefly supported by local taxation, and placed under Government inspection.

British West India Islands.

XXVII. The BAHAMAS about 500 in number. *Productions* are sugar, maize, fruits, cotton, turtle, salt, &c. Nassau on the isle of New Providence is the capital.

JAMAICA, the most valuable of our West Indian possessions, is situated 80 *m.* S. of Cuba, and 100 W. of St. Domingo. Its length is 150 *m.*, breadth 40. The *Blue Mountains* (7,000 feet) traverse the island from E. to W., and send out to the coast rippling streams. The climate, except in the elevated regions, is excessively hot; the sugar-cane, maize, rice, yams, coffee, and cotton, are cultivated; the forests produce excellent timber and delicious fruits. Horned cattle, sheep, goats, and hogs abound; and its rivers and seas produce many varieties of valuable fish. Sugar and rum are exported. The towns are Spanish Town, Kingston, and Port Royal.

XXVIII. The following is a tabular view of our West Indian Islands :—

Island.	Area.	Population.	Chief Town.
Bahamas . .	5,000	35,000	Nassau.*
Jamaica . .	6,400	505,433	Spanish Town.*
Virgin Isles .	144	6,051	Roadtown.*
St. Christopher .	70	28,300	Basse-terre.
Nevis . .	20	12,000	Charlestown.
Antigua . .	108	35,000	St. John.*
Montserrat .	54	9,600	Plymouth.
Dominica . .	288	29,000	Roseau.
St. Lucia . .	300	31,000	Castries.
St. Vincent .	131	36,000	Kingstown.
Barbadoes .	166	163,000	Bridgetown.*
Grenadines .	138	36,000	St. George.
Tobago . .	99	16,000	Scarborough.
Trinidad . .	2,000	110,000	Port of Spain*

* Residence of a Governor.

The BERMUDAS, an important naval station, consist of above 400 islets. *Hamilton* is the capital.

BELIZE, or BRITISH HONDURAS, area 13,000 square miles, population 25,000, produces timber and logwood. Belize is the capital.

South American Colonies.

GUIANA, with an area of 76,000 square miles, and population of 194,000, produces coffee, sugar, timber, ginger, maize, and rum. *Georgetown is the capital.*

FALKLAND ISLES, area 13,000, population 812, are convenient as a place of call for vessels. Stanley is the capital.

XXIX.—AUSTRALIA lies between the parallels of 10° 45′ and 39° 5′ S. latitude, and the meridians of 112° 20′ and 153° 30′ east longitude. Its length, from Cape York in the N. to Wilson promontory in the S., is 1,960 miles; and its breadth between Cape Byron and Steep Point about 2,400 *m.* Its coast line is about 8,000 *m.*

Gulfs, Bays, Straits, &c.—On the E. *Botany*, *Trial*, *Moreton*, *Harvey*, *Keppel*, *Trinity*, and *Princess Charlotte* bays, with several other inlets. On the N., the the *Gulf of Carpentaria*, *Melville*, *Arnheim*, and Castlereagh bays, *Clarence* and *Dundas* straits, with *Van Diemen* gulf between Melville island and the mainland; *Apsley* strait between the same island and Bathurst. On the W., *Cambridge*, *Admiralty*, and *Exmouth* gulfs; *Collier*, *Shark*, and *Geographe* bays. On the S., *Spencer* gulf, *Blackstairs Passage*, and *Port Philip.*

XXX.—**Capes**—On the E., *Howe*, *Byron*, *Moreton*, and *Melville*; on the N., *York*, *Arnheim*, *Wilberforce*, and *Van Diemen*; on the W., *Cuvier* and *Leeuwin*; on the S., *Chatham*, *Spencer*, *Nelson*, *Otway*, and *Wilson.*

Mountains.—The *Grampians*, *Pyrenees*, the *Australian Alps*, *Liverpool Range*; Mounts *Mitchell*, *King*, and *Nicholson*, with *Denham Peak*, *Clarke*, *Johnston*, and *Fletcher* ranges; *Flinders* and *Stuart* ranges; *Victoria*, *Herschel*, *Darling*, and *Capricorn*; *Ellesmere* and *Sugarloaf* in North Australia.

Lakes—*Alexandrina*, *Torrens*, *Eyre*, *Frome*, *Gairdner*, *Gregory*; with *Austin*, *Moore*, *Cowan*, *Cary*, and *Lefroy.*

Rivers—The *Murray* (1,300 *m.* long), with its tributaries, the *Darling*, the *Lachlan*, and the Murrumbidgee, drains the best known district. It forms the boundary between Victoria and New South Wales, and after a very winding course, enters an arm of Encounter Bay. In Queensland are the *Brisbane*, *Fitz-Roy*, and *Burnett*. The *Roper* flows into the G. of Carpentaria. The *Palmer* runs through rich gold fields.

XXXI. Table of the Australian colonies :—

Colony	Area Sq. miles	Population	Capitals
New South Wales.	323,437	604,000	Sydney (*Port Jackson*)
West Australia	980,000	60,000	Perth (*Swan river*)
South Australia.	760,000	196,000	Adelaide (*St. Vincent Gulf.*)
Victoria	88,408	791,528	Melbourne (*Yarra Yarra*)
Queensland	660,000	173,000	Brisbane(*Brisbane*)
Tasmania	27,000	102,000	Hobart Town (*Derwent*)
Fiji	10,000	160,000	Levuka

Total population, with 170,000 natives, about 1,825,000.

XXXII.—NEW SOUTH WALES lies in the S.E. It is rich in agricultural produce and all kinds of stock, particularly sheep.

Sydney (135,000), on the shore of one of the finest harbours in the world, is an elegant commercial town, with a university.

Paramatta (5,000), 15 *m.* N.W., is the oldest town in Australia. *Maitland* and *Newcastle*, both on the Hunter river, have coal mines in their vicinity. *Bathurst* is in the gold region.

WEST AUSTRALIA, formerly called Swan River Settlement, is of much less importance.

Perth (*Swàn*) is a small town. *Freemantle* is its port, the well-known penal colony.

SOUTH AUSTRALIA runs right through, and contains *N. Australia*, with *Palmerston* as its capital. It is an extensive district of lakes, sandy soil, saline mudlakes, and shrubbery. Pasturage is the chief industry.

Adelaide (35,000) (*St. Vincent G.*) is a fine town, with large exports of wool and copper. *Port Adelaide* (12,000), its port, has a good harbour. *Kapunda* is a large town, with agricultural and mining industries.

VICTORIA has a climate resembling that of southern Europe. Excellent crops of wheat, oats, barley, hops, and tobacco are raised, and the vineyards give an abundance of good wine. It exports wool, tallow, copper, wheat, and flour.

Melbourne (125,000) *Yarra Yarra* is a large and flourishing city, with a university. It is the life and centre of the trade of the colony. *Williamstown* at the mouth of the river, *Geelong* (25,000) with immense wool stores, and *Ballarat* (25,000) are important towns.

XXXIII. — QUEENSLAND is admirably adapted for cotton culture; but sheep-farming is the prevailing industry.

Towns.—*Brisbane, Twoomba, Ipswich,* and *Rockampton.*

TASMANIA has a splendid climate.

Towns—*Hobart Town* (25,000) and *Launceston* (10,000).

The *Fiji* or *Feejee* islands, about 225 in number, produce cotton, coffee, sugar, cocoa, nutmeg, arrowroot, and ginger, tobacco, and bread-fruit They have a parliament, under a governor.

XXXIV.—New Zealand.

NEW ZEALAND consists of three islands, extending from N. to S. in a kind of curve.

STEWART ISLE is at the south. *Wellington* is the capital of the entire colony.

Islands	Provinces	Chief Towns
New Ulster, or N. Island	1. Auckland	Auckland (Thames)
	2. N. Taranaki	New Plymouth.
	3. Wellington	Wellington.
	4. Hawke Bay	Napier.
New Munster, or Middle Island	5. Nelson	Nelson.
	6. Canterbury	Christ Church.
	7. Otago	Dunedin.
	8. Marlborough	Blenheim.
New Leinster or Stewart Isle	9. Southland	Invercargill.

Minerals—Coal, gold, iron, and copper, tin, lead, marble, alum, and sulphur.

Fish are numerous in the seas and rivers.

The European population (1876) is about 375,000, and the total about 500,000.

The three principal ports are :—*Auckland, Dunedin*, and *Lyttleton ;* the *Auckland* and *Norfolk* Isles are dependencies.

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